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CHILDREN OF THE COVERED WAGON

Report of the Commonwealth Fund Child Health Demonstration in Marion County, Oregon, 1925-1929

ESTELLA FORD WARNER, M.D.
GEDDES SMITH

NEW YORK
THE COMMONWEALTH FUND
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FOREWORD

THIS *book is addressed particularly to readers in the Northwest who may be interested in forming an opinion as to the value of the most complete public health service which has yet been provided in rural Oregon.*

The work here described was sponsored jointly by the people of Marion County and by the Commonwealth Fund. The latter, a philanthropic foundation with headquarters in New York, set up in 1922 a child health project which included demonstrations in four communities—Fargo, North Dakota, Clarke County, Georgia, Rutherford County, Tennessee, and Marion County, Oregon—administered by a Child Health Demonstration Committee. The Marion County demonstration, lasting from 1925 to 1929, resulted in a decision on the part of the county and its principal cities to continue, at their own expense, the health program which had been developed with the Fund's assistance.

Further information about details of work in Marion County may be had from the health officer, Dr. Vernon A. Douglas, Salem, Oregon. The reports of the other three demonstrations, and other information about the public health work of the Commonwealth Fund, may be obtained by addressing its office, 41 East Fifty-seventh Street, New York.

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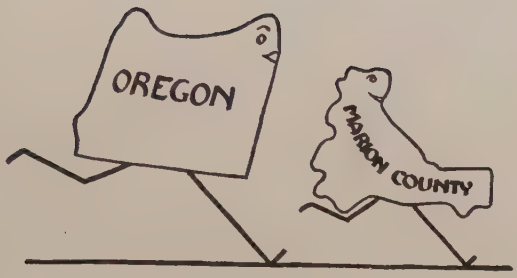


CHAPTER I

OUTSTRIPPING OREGON

OUTSTRIPPING OREGON

OF ALL the forty-eight states, Oregon is the best for babies. Such is the testimony, at least, of the birth and death records. In every year but one since 1919[1] babies born in Oregon have had a better chance of living through their first year than babies born in any other state, and even in the exceptional year Oregon ranked second. Portland, which holds between a quarter and a third of all the people of the state, ranks second among the larger American cities.

But Marion County, Oregon, gives its babies a better chance than the best state in the Union. Accurate records of births and deaths have been kept in this county for the past ten years. During the first half of this decade, 1920–24, babies born in Marion County had a slightly better chance of survival than those born in the state as a whole. But during the second five years, 1925–29, that chance was considerably bettered. Out of each thousand babies born in Marion County in 1920–24, fifty-five died in their first year. Out of the same number born in 1925–29, only forty-three died in their first year. The rate of improvement in Marion County, as measured by the falling death rate, is twice that of the United States generally and nearly twice that of the state of Oregon. The figures follow.

[1] This was the year in which Oregon was admitted to the Birth Registration Area; that is, when its records became so complete that they were accepted without question by the United States Census Bureau. Nearly all the states are now in this classification, though about a third of them reached the standard after Oregon.

INFANT DEATH RATES, 1920–29

(Deaths under One Year per 1,000 Live Births)

	1920–24	1925–29	REDUCTION
United States Registration Area	77.1	69.1	10%
Oregon, omitting Portland	57.4	52.3*	9%
Oregon, entire state	56.4	49.2	13%
Marion County	55.4	43.3	22%

*1929 missing.

Nearly half the babies who die before they reach their first birthday die within a month after birth. The first month, when the child's health is most affected by the mother's condition during pregnancy and by the hazards of birth, is the most dangerous month of life. For this reason health workers usually divide the death rate for the first year into two parts: deaths at less than one month of age and deaths in the next eleven months. They have found that while both rates are improving, most of the gain in recent years has been among the older babies. It is hard to decrease the high mortality of the first four weeks.

Here, however, Marion County has made its greatest progress. In the last five years it has bettered its death rate for babies under one month by nearly a quarter. It has done almost twice as well as the state of Oregon, and four times as well as the nation at large.

INFANT DEATH RATES BY AGE, 1920–29

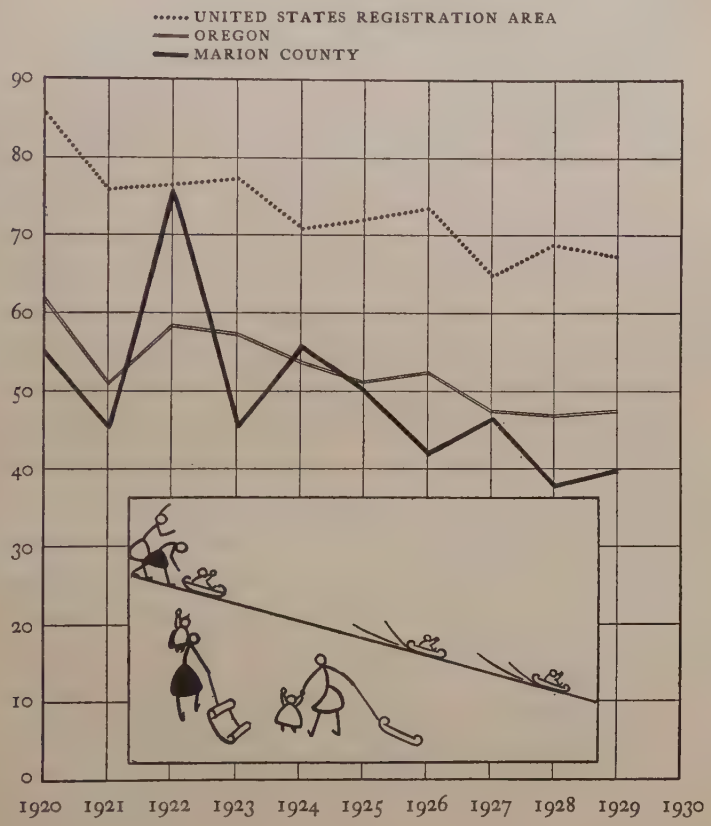
(Under One Month)

	1920–24	1925–29	REDUCTION
United States Registration Area	39.8	37.3*	6%
Oregon	36.1	31.3*	13%
Marion County	36.9	28.2	24%

*These averages are based on the latest available data. Where asterisks appear, the figures for 1929 are missing. The effect of the 1929 figures on the Marion County averages may be judged from the annual rates (see page 113).

DEATH RATES OF BABIES UNDER ONE YEAR OF AGE

(*Deaths per thousand live births*)



INFANT DEATH RATES BY AGE, 1920–29

(One Month to One Year)

	1920–24	1925–29	REDUCTION
United States Registration Area	37.3	32.3*	13%
Oregon	20.3	18.1*	11%
Marion County	18.6	15.0	19%

*1929 missing.

Oregon has reason to be proud of its favorable showing with respect to its babies. But curiously enough, it is a much better place for the babies who are born than for the mothers who bear them. Motherhood is more dangerous in the United States than in most of Europe, in Australia, New Zealand, and Japan. Before 1925 it was more dangerous to have a baby in Oregon than it was in the United States generally. This condition has changed for the better, but Oregon is still lagging behind other states, including its neighbors California and Idaho.

Here again Marion County has outstripped the state in which it lies. In 1920–24 it had a little less than its share of deaths at childbirth, by comparison with Oregon, but more than its share by comparison with the whole Registration Area. In the last five years it has cut its rate squarely in half. Marion County now outranks both state and nation.

MATERNAL DEATH RATES, 1920–29

(Deaths at Childbirth per 1,000 Live Births)

	1920–24	1925–29	REDUCTION
United States Registration Area	6.9	6.5*	6%
Oregon, omitting Portland	7.9	6.5*	18%
Oregon, entire state	7.7	6.4*	17%
Marion County	7.3	3.6	51%

*1929 missing.

So much for mothers and babies. So many of them die in the United States that particular attention has been paid to the death rates in these groups and to ways and means of reducing them. But the death of a five or ten-year-old child is surely no less tragic, and even more costly to the community, than the death of a baby. How have older children fared in Marion County? The answer is once more favorable to the county by comparison with the state and with the nation at large.

DEATH RATES FOR CHILDREN FROM ONE TO FOURTEEN YEARS OF AGE, 1920–29

(*Deaths per 10,000 Population*)

	1920–24	1925–29	REDUCTION
United States Registration States	40.0	31.9*	20%
Oregon	31.8	26.6*	16%
Marion County	32.4	21.9	32%

*1929 missing.

Putting these two groups together, the babies under one and the children from one to fourteen, the Marion County record shows that in the five years, 1920–24, there were 446 deaths among children under fifteen. In the last five years there have been 339 deaths in the same group. The difference represents more than 21 lives saved every year, or a total of 107 for the five years. And the decrease has been surprisingly steady—93 deaths in 1925; 74 in 1926; 61 in 1927; 55 in 1928; 56 in 1929. Fifteen children died of communicable diseases in 1925; six in 1926; three in 1927; one in 1928; one in 1929. The death rate from communicable diseases in the entire group has been cut in half.[2]

One of these communicable diseases, diphtheria, has been

[2] Death rates classified by cause will be found in Table 5 on page 115.

the object of attack in many parts of the country during the past ten years. Marion County had a very high death rate from diphtheria in 1920–24 and, though it still has more than its share of deaths by comparison with the state, it has made rapid progress in reducing them. While the Oregon rate at all ages has come down from 10.0 to 6.6, or 34 per cent, the Marion County rate has been cut from 22.2 to 8.6, or 61 per cent. The reduction in both cases and deaths is worth a table by itself:

DIPHTHERIA CASES AND DEATHS, MARION COUNTY
1920–29

	CASES	DEATHS		CASES	DEATHS
1920*	5	2	1925	165	17
1921*	28	7	1926	87	2
1922	53	5	1927	41	1
1923	249	19	1928	23	0
1924	265	17	1929	24	1

*The low ratio of cases to deaths in these years suggests that many cases may have gone unreported.

The experience of the county with other communicable diseases, at all ages, is summarized in the statistical tables at the end of this report.[3] In dealing with tuberculosis Marion County has been more successful than the state in reducing the death rate, and the county rates are consistently below those of the state. The typhoid fever death rate is below that of the state, but shows a smaller reduction. Smallpox causes less than one death per year in Marion County, but even this is enough to keep the rate above that for Oregon, which in turn is slightly above that for the United States as a whole. But while the state death rate from this disease has stood still, the county rate has been cut in half.

[3] Table 7 on page 116.

What do all these figures mean? Do they mean anything? In a small group of people during a short space of time there are so few births and deaths that chance plays a relatively large part in their distribution and the resulting rates may be more or less accidental. For this reason a death rate which seems very good or very bad may not actually have much significance. But Marion County has a population of more than 50,000[4] and nearly 900 births a year. In such a group of people the death rates over a ten-year period, though not so conclusive as those for the whole state of Oregon, probably do mean something. Even so, if Marion County excelled the state only in infant mortality, or only in the maternal death rate, or only in the death rate among older children, or only in the reduction of diphtheria, there might be occasion to say that the advantage was merely a matter of chance. But when all these advantages come together in one county, there is reason to believe that something more than chance is at work.

Is the favorable location of Marion County, in the heart of the fertile Willamette Valley, the reason for its outstanding health achievements? Marion, Polk, and Yamhill Counties form a natural group, with Salem as their principal trading center. All lie in the Willamette Valley. Marion is the largest in population,[5] and the richest, but climate, soil, and output are much the same throughout the three counties. The doctors join in the Polk-Marion-Yamhill Medical Society, and there are many other channels for the sharing of experience. Yet a comparison of the infant and maternal mortality rates of these adjoining counties shows that Marion is the only one to register substantial gains in both rates, that its gains are larger, and that its present rates are lower than those of either of its neighbors.

[4] In 1930, 55,000, not counting inmates of state and federal institutions. See page 111.

[5] 1920 census—Polk 14,181; Yamhill 20,529.

INFANT AND MATERNAL DEATH RATES, POLK, YAMHILL, AND MARION COUNTIES

	INFANT DEATH RATES			MATERNAL DEATH RATES		
	1920–24	1925–28	CHANGE	1920–24	1925–28	CHANGE
Polk . . .	52.8	52.2	*Down* 1%	7.5	6.8	*Down* 9%
Yamhill . .	45.2	49.4	*Up* 9%	9.6	5.1	*Down* 47%
Marion . .	55.4	44.0	*Down* 21%	7.3	3.3	*Down* 55%

Since 1925 Marion County has had a broader and more intensive health service and a larger health staff than any other county in Oregon except Multnomah, which includes Portland. It seems reasonable to relate the health achievements recorded in this chapter to the fact that Marion County has a sound plan of health work, a staff competent to carry it out, adequate funds to finance it, and public opinion to back it up.

If public health service has been an important factor in the lowering of death rates in Marion County, one would expect to find the saving of life more or less directly associated with the service of public health workers to individual citizens. So far as the available records go, this has been the case in Marion County.

To put this assumption to the test, a special study was made of all the births and maternal and infant deaths in a period of four years from October 1, 1925, when the health program in Marion County was well under way. During this period there were 3,363 births in the county. In 483 cases prenatal care was given by a public health nurse, leaving 2,880 without such service. The nurse always made a point of urging the mother to put herself under a doctor's care. Maternal deaths, stillbirths, and the deaths of babies under one month of age were counted separately for the group which the nurses had reached and the group not reached, with the following results:

DEATHS AND DEATH RATES AMONG MOTHERS AND INFANTS IN RELATION TO PRENATAL NURSING CARE

	UNDER CARE	NOT UNDER CARE
Total births	483	2,880
Maternal deaths	0	11
Death rate per 1,000 births	*0.0*	*3.8*
Stillbirths	3	108
Stillbirth rate per 1,000 births	*6.2*	*37.5*
Live births	480	2,772
Deaths under one month	8	87
Death rate per 1,000 live births	*16.7*	*31.4*

From October 1, 1925, to the date of writing,[6] no Marion County mother who has received public health nursing care during her pregnancy has died at childbirth. This record will fall sooner or later, but it is one of which the health staff of Marion County is proud. The other items in the table are perhaps more important indications of the part played by health service in reducing mortality. There is a clear advantage for the babies, born and unborn, whose mothers had the benefit of public health and private medical care together.

During the same four-year period a similar study was made of the deaths of babies between one month and one year of age. In these months other factors come into play: the care which the baby receives begins to weigh as much in his chances for survival as the circumstances under which he entered the world. There were 3,157 babies of this age in Marion County during the period in question. More than half of them, 1,613, had direct contact with public health workers either through a visit to a health center where a public health physician examined them, or through a

[6] June 1, 1930.

home visit by a public health nurse, or in both ways. The advantage lies, decisively, with the group which had public health service.

DEATHS AND DEATH RATE OF INFANTS ONE MONTH TO ONE YEAR OLD IN RELATION TO PUBLIC HEALTH SERVICE

	UNDER HEALTH CENTER OR NURSING CARE	NOT UNDER HEALTH CENTER OR NURSING CARE
Number of children	1,613	1,344
Number of deaths	7	40
Death rate per 1,000 children	*4.3*	*25.9*

It is impossible to apply a similar test to all the children in Marion County. The older the child, the wider his contacts with his environment, and the harder it is to analyze the factors which affect his health. Even in the limited group of mothers and babies, such comparisons are not strictly conclusive. There may have been some unseen advantage on the side of the mothers and children who had public health care; perhaps they would in any case have taken better care of themselves. The nurse and doctor are no respecters of persons, however, and they try to give service where it is most needed, so that it is very unlikely that there was any division along the line of economic or social inequality. Even if one cannot prove beyond doubt that health service is largely responsible for the recent health progress of Marion County, the evidence points strongly in that direction. It seems reasonable to sum up the facts at hand as follows:

1. Marion County has made substantial health gains in the past five years.
2. These gains have given it an outstanding position in a state already ranking high in health.
3. These gains appear to be closely related to the development of adequate health service in the county.

CHAPTER II

THE PLAN OF WORK

THE PLAN OF WORK

WHAT were the health services which, thrown into the balance in Marion County, seem to have tipped the scales in favor of child health? First of all, they were carefully planned: they hung together as a unit because they were designed in keeping with principles of public health which are true for any community. But they were also flexible: they varied from place to place within the county because they took shape from neighborhood needs and preferences.

The business of any full-fledged health department, in its simplest terms, may be defined about like this:

1. To rid the environment in which people live of conditions which are likely to cause disease, especially by guarding milk, water, and food supplies from contamination and by securing the clean and safe disposal of human wastes.
2. To guard against epidemics, by preventing so far as possible the occurrence of the diseases which cause them and by holding them closely in check when they do occur.
3. To encourage the public to take advantage of preventive medicine as a means of building up health and warding off disease. The cornerstone of preventive medicine is the periodic medical examination.
4. To educate the public in healthful living, through general publicity and especially through the nurses, who teach health in the homes, and the teachers, who guide children at school.
5. To keep accurate tally of births, deaths, and diseases, so that the community is aware of its gains, its losses, and the points at which its safety is threatened.

Six years ago, before the beginning of the period covered by this report, no one of these five jobs was very well done in Marion County, though each had been begun. The county health officer and the corresponding officials for Salem and the smaller cities did something to control epidemic diseases, but none of them gave his full time to

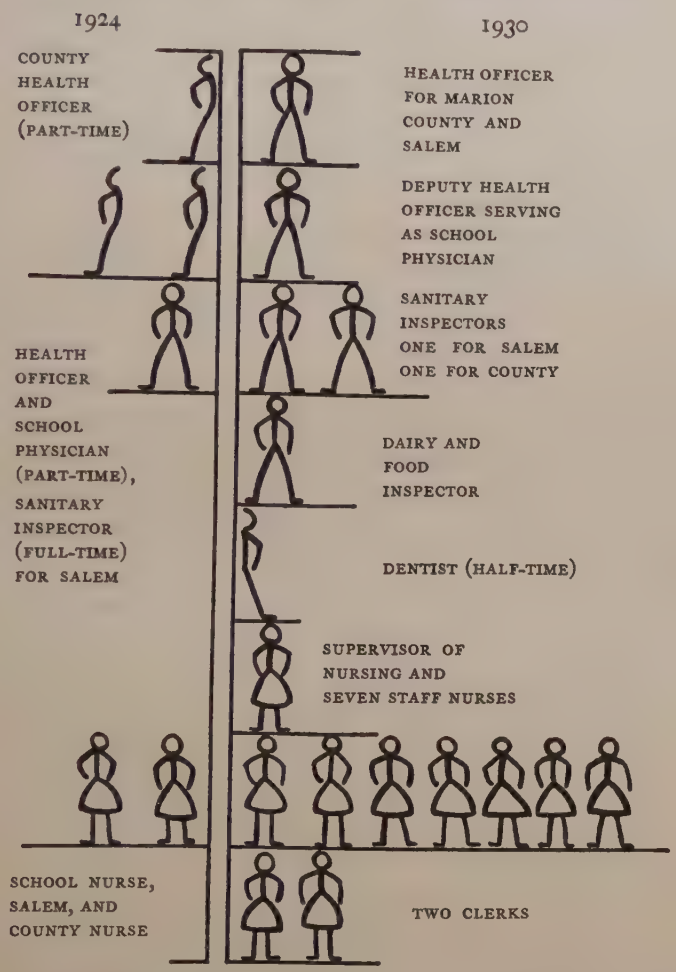
the work and it would have been unreasonable to expect the results that come only with continuous watchfulness and instant action in emergency. The Salem schools recognized the importance of medical examinations by employing a part-time school physician, and the Silverton schools got similar service from local volunteers. The Salem schools had a nurse who divided her time between the school buildings and home visiting, and the Marion County Health Association had employed a county nurse for about two years. These two workers were responsible for the nursing needs of nearly 50,000 people. A sanitary inspector in Salem kept an eye on nuisances. The county school superintendent surveyed the county schools in the effort to make them more sanitary. There was no serious effort to keep milk supplies up to standard, and no effort at all to improve general sanitation in the county. By comparison with the leading counties of Oregon—five of which already had full-time health officers—Marion was backward. In 1924 the voters turned down a proposal to pay the salary of a county nurse. The state Department of Health had never been able to get official cooperation in Marion County for the traveling child health clinics which it offered throughout the state.

Local leadership, however, responded eagerly to the offer of the Commonwealth Fund in 1924 to set up a thoroughgoing piece of child health work in some county on the Pacific coast. The Salem Chamber of Commerce rallied public and private agencies—including the many community clubs which flourished in all parts of the county—in a joint application for this aid, and after a careful study of the thirty-two communities which were competing for the grant, Marion County was chosen.

The Commonwealth Fund proposed to pay for a limited term of years the greater part of the cost of a public health

PUBLIC HEALTH WORKERS IN MARION COUNTY

BEFORE AND AFTER THE DEMONSTRATION



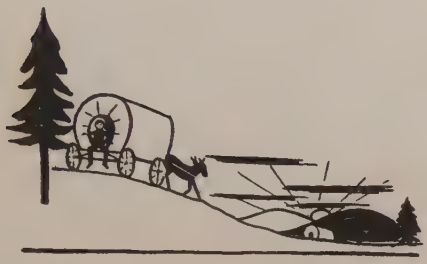
staff which, in cooperation with physicians, dentists, schools, and other community agencies, would build up a sound working organization. As the county learned what this organization could do for the public welfare, public authorities would gradually take over the cost of the work, and the Fund would gradually turn over the whole enterprise to full local control. The Fund would pay the bills, in other words, while the county experimented with health service of a high grade. At the end of the experiment the county would have, as a going concern, a well-planned and well-balanced health department.

Early in 1925 a staff was organized and the Marion County Child Health Demonstration was begun. At first the part-time health officers continued to function as before, but in the fall of 1925 smallpox became sufficiently threatening to alarm the county, and the authorities saw that they needed more intensive health department service to control it. Early in 1926 a full-time health department was set up jointly by the county and the city of Salem; the director of the demonstration was made health officer, and a deputy health officer, also on full time, was added to the staff. In 1928 this deputy became county and city health officer, and at the end of 1929 the demonstration went out of existence and the Marion County Health Unit took over its work. The division between demonstration and county unit was at all times merely administrative, for the program was indivisible. The work which is now going forward in Marion County is neither more nor less than a well-rounded health department job.

The staff of the health department includes the health officer; a full-time assistant who is also a physician; a half-time dentist; a supervisor and seven public health nurses, who divide the city of Salem and the rest of the county by districts, each nurse doing all kinds of nursing service in

her own district; a dairy inspector; a sanitary inspector for the county; and two clerks. There is also a sanitary inspector for the city of Salem, who cooperates with the health unit though he is not officially a part of it.

In the chapters which follow, the application of the balanced health department program to Marion County will be sketched in some detail so far as sanitation, the prevention of epidemics, preventive medicine, and health education are concerned. The keeping of vital statistics is a routine administrative task which does not need much further comment here. The most important changes in this field which were brought about in Marion County were two: births and deaths, instead of being reported directly from local registration districts to the state health officer, were reported first to the county health unit, so that all the useful information about Marion County was available for prompt use inside the county; and after the reports were at hand, they were carefully checked for accuracy and studied to discover just what they meant. A statistician was employed during the demonstration period to develop this work, and at the end of the five years health department record clerks, trained for the purpose, took it over.



CHAPTER III

THE COUNTY

THE COUNTY

BEFORE sketching the way in which the health plan outlined in the last chapter actually worked in Marion County, it will be well to look more closely at the county itself. As the West measures age, it is an old community. French Prairie, its northwestern fringe, has yielded crops—and good ones—for an even century: it was the first stretch of farmland to be tilled by permanent settlers within the present boundaries of the state. The lure of soil and climate such as the Willamette Valley offered kept the covered wagons creaking over the plains and the farmers soon outnumbered the trappers and traders who preceded them. They were sober men, drawn in part from disillusioning experience in the Mississippi Valley, which then had no adequate outlet for its produce, but drawn also from all the older eastern states. They knew by instinct how to organize their wagon trains and their new communities. The meeting at Champoeg in 1843 which declared for a civil government under American authority was not merely an affirmation of their loyalty to the United States; it was the sign that stable institutions had come to the frontier. The stability, the taste for organization, and the conscious Americanism of these early settlers are still characteristic of Marion County, and since its life has constantly been renewed by new and adventurous blood, the stability and Americanism have not degenerated into reaction and intolerance as has so often happened in more static communities.

Marion County lies east of the Willamette, across the main north and south highways of the coast, and stretches eastward in one narrowing strip clear to the Cascades at Mt. Jefferson. From north to south, forty miles of truck farms, wheat fields, berry patches, hopyards, orchards

succeed one another in a pleasant pattern, broken often by clumps of pointed fir and woodlots of moss-hung oak. In the north, fields are brown or black, and flat; to the south, smoky ranks of prune trees march over smooth red hills. As one crosses the seventy miles eastward from the river to the mountains, the fruit fields give place gradually to timber, and the last twenty miles lead through the Santiam National Forest. Local industry, for the most part, follows the most important crops: canneries for the fruits and berries, sawmills for the timber. But there is variety and an experimental fringe in both farming and manufacture: there are flax fields and linen mills, dairy herds and creameries, paper mills, sheep and poultry, an old lake-bed yielding famous celery, filberts, peppermint, fox farms. Land-holdings are small as well as diversified, most of the land is worked by its owners, and the valleys are dotted with little towns, jealous of their individuality and surprisingly self-sufficient.

The names of these towns and of their neighboring school districts suggest how varied their history has been and how naturally they cling to their own separate ways. St. Paul, St. Louis, Gervais recall the French Canadians who in the earliest days outnumbered the Americans; Aurora was a Utopian colony founded by German socialists; Sublimity expressed the sentiment of a group of Christian Brethren in the face of a not unusual Oregon landscape; Mt. Angel borrowed its name from the Engelberg in Switzerland from which its Benedictine brotherhood came; Salem seems appropriate for a settlement begun by Methodist missionaries; Macleay, McAlpin, McLoughlin, and Mahoney tell their own story of the founding fathers; Independence, Liberty, Triumph, and Whiskey Hill smack of sturdy American traditions.

Today eighteen of these settlements are full-fledged

ROLLING HILLS, POINTED FIRS, AND ORCHARDS
ARE CHARACTERISTIC OF MARION COUNTY

THE BRISK CITY OF SILVERTON IS JUSTLY PROUD
OF ITS HEALTH CENTER, SCHOOLS, AND GOOD ROADS

"cities," ranging from Salem with 26,260 inhabitants in 1930 to St. Paul with 148. Thirteen of them (including one or two which straddle the county line) have high schools and three have hospitals. There are 119 county schools outside Salem and Silverton, which maintain independent city school systems. Consolidation finds little favor; some districts were organized a good eighty years ago and few are willing to lose their identity. Consolidated high-school districts are, however, well established, some with public bus service. Parochial schools are numerous and there are one or two Protestant church schools as well. Community clubs of a dozen varieties spread over the county; some of them have their own community halls, and schoolhouses are adapted to the staging of neighborhood plays. Though French, German, and Scandinavian strains have played important parts in the settlement of some communities, and though Japanese and a few Chinese are entrenched here and there, the community rightly claims to be predominantly native born.[1] Oregon once passed a law forbidding Negroes to settle within the state and there are only a handful in the county. In spite of racial and historical variations, the automobile and good roads make it so easy to reach the larger towns from almost any cranny in the hills that the smaller trading centers are beginning to lose ground and the county is more and more closely amalgamated.

Fifty thousand people have plenty of elbowroom in nearly 1,200 square miles of territory. Rhode Island, not quite so large as Marion County, holds twelve times as many inhabitants. The fact that Marion County is still on the make, and largely undeveloped, underlies all its public health problems. Sparsely settled school districts are hard pressed in many instances to find the money for modern

[1] In 1920 the census showed 85.8 per cent of Marion County residents to be native white, 11.8 per cent foreign-born white, and 2.4 per cent colored, including Orientals.

sanitary buildings. Open country encourages a casual attitude toward problems of sanitation and water supply. It takes a long time to travel from one knot of farms to another, so that transportation time and cost loom large in any health service. It is not easy to cover the ground so thoroughly that communicable diseases are caught at their source. Any plan of health work must leave room for a good deal of flexibility: the health officer, the sanitary inspectors, and the nurses must all seize opportunities for service as they come, plan their work carefully, and think quickly and travel fast when emergencies arise.

CHAPTER IV

THE PLAN AT WORK: SANITATION

THE PLAN AT WORK: SANITATION

THERE is a close connection between the geographical character of the country in which people live and the special sanitary problems which they face. This makes it convenient to begin the description of health services in Marion County with sanitation, although other problems were more pressing when the demonstration was begun and sanitary activities developed later than some others.

This type of service has been responsible for some of the most dramatic successes in the history of public health: the wiping out of yellow fever by cleaning up the breeding places of mosquitoes and by screening houses and public buildings is a case in point. In Marion County, fortunately, no such severe danger has threatened the health of the public. But milk, water, and miscellaneous foodstuffs are consumed by everyone, and all can carry diseases. Milk from tuberculous cows can cause a crippling form of tuberculosis in children; milk from dirty dairies can carry typhoid; milk that has been handled by persons infected with diphtheria or scarlet fever can spread these diseases. Water contaminated with sewage may carry typhoid fever. Food served in unclean dishes can transmit a variety of infections. Unsanitary privies are literally breeding places of disease, because they attract the busy fly and because they poison the soil from which water drains into wells and streams.

Before Marion County had its health unit, state law required milk producers to observe certain minimum standards, but did little to enforce any of them except the testing of dairy herds for tuberculosis. Water supplies for the most part were left to take care of themselves, though laboratory tests were being made of school wells. While the larger towns and cities were sewered, the rest of the

county was supplied with privies which, if they were not so bad as those in some parts of the country, were by no means so good as they should be.

There was plenty of room for improvement. Drinking water in Marion County comes from streams draining lightly settled watersheds or from wells. The gravel beds beneath the deep soil make it possible to find good water almost everywhere if one digs far enough for it; there is no limestone to broadcast infection; typhoid fever, thus far, has been infrequent. But unless some trouble is taken to find good water, the supply is not good enough now and as the county gains population, the probability of serious contamination will steadily increase. Many town and private supplies which have been tested have shown sufficient impurity to warrant the health department in making a vigorous effort to improve them. Salem has already felt the danger of careless handling of water; thirteen cases of typhoid in 1927, two of them fatal, seemed to be traceable to polluted water running into the public mains from private supplies used for fire protection, washing, and the like. This particular hazard was ended with the help of the state sanitary engineer by abolishing the cross-connections between the public and private systems. The job of the health department is to rouse a community which has been getting by with indifferent water to safeguard itself against some danger now and growing danger in the future.

The health department began to pay particular attention to this problem in 1928 when a sanitary inspector for the county was first employed. The work was well established in 1929 and is now progressing steadily. Some definite improvements have been made in town supplies. Turner, for example, was drinking water from a hillside reservoir polluted with dead cattle and variegated litter. The sanitary inspector got the authorities to clean out the springs,

line the reservoir with concrete, and screen the whole affair. In Stayton the municipal supply, drawn from the creek which runs by the city and turns several mill wheels, is of unsatisfactory quality. At the suggestion of the county health department the city has bought an island between the forks of the creek and has dug a reservoir there into which water seeps through a natural filter—twenty feet of gravel—and which will furnish a safe supply.

In one small city where many private wells have been tested the school well is one of only two in town which yield good water. In many cases the school supply is now the best in the neighborhood, for systematic attention has been paid to improving the water that school children drink. Samples collected each year are tested at the laboratory to determine their purity. When the first samples were taken in 1925, only 43 out of 123 on which reports were received showed water which was satisfactory for drinking. At the end of work in 1929, only five schools out of 112 had water which was unsatisfactory or questionable. Improvement has been brought about in various ways, sometimes by chlorination, sometimes by curbing a well to protect it from surface drainage, sometimes by sinking an entirely new well or piping water from a good spring. When a farmer asks for a test of his own well the health department makes it and advises him as to the results; some private supplies have been improved as a result, but it has not been possible to make such tests general.

There is a similar situation with reference to privies. The standard of living in Marion County is such that the ramshackle surface privies which are common in some states are very rarely seen. Outside the larger cities and towns, which are sewered, most houses have pit privies. But few are fly-proof or properly ventilated, and in the low-lying districts the wet spongy soil is soon polluted by seepage

from the pit unless it is well lined with concrete. As a demonstration, the health department in one small city built a standard privy in the rear of the bank; the banker and almost all the rest of the town turned out to see it. In another town a satisfactory metal riser with vent pipe was shown to the local blacksmith who was so much interested in it that he carried it off and set it up on the speakers' platform at a community picnic. Neither demonstration, however, has yet convinced the townspeople that the right type of privy is worth what it costs, and since in most communities the problem is not acute, further steps have been postponed till more urgent matters have been adjusted. Effort has been concentrated on the toilet facilities of the school buildings, which are now about 40 per cent satisfactory.

General improvement in the buildings and equipment of the rural schools comes about slowly, varying from district to district with the resources and enlightenment of local school boards and the energy and leadership of school principals. In the period of nearly ten years since the present county superintendent took office, twenty-one new buildings have been put up and fifteen have been extensively remodeled. It is hard to generalize about the schools today: the districts which have built most recently have fine buildings of two rooms or more with windows adequate and well placed, excellent ventilation, graded (though usually not adjustable) desks and seats, basement furnaces, flush toilets, hand basins (sometimes with hot water, liquid soap, and paper towels), bubbling fountains, stages for community entertainments, and often a kitchen for serving hot lunches and community refreshments. Sometimes it is only a few miles along the highway from such a school to a dreary old building, shabby outside, dingy inside, with dark coat rooms, dirty walls, a clumsy stove (usually

jacketed, however), and ancient desks. Often one finds the depressing schoolhouse smell. Occasionally children still drink from a bucket and dipper, but often there is a bubbling fountain or individual drinking cups. One little school has a motley collection of cups, tumblers, and jelly glasses which are boiled out by a neighbor once every month. In the same school the teacher warms water on the schoolroom stove during the winter to encourage the habit of hand-washing before lunch.

The sanitary inspector has cooperated with the county superintendent in planning improvements for these old buildings; many have had window boards installed for better ventilation; window shades have been changed from dark to light; windows have been rearranged; new privies have been built, or old ones repaired; gravel has been dumped on muddy yards. It has taken patient effort to bring the more reluctant school boards to the point of radical changes; some districts will do one job a year, and only that; others are ready to go ahead as fast as the way is indicated. The inspector seizes his opportunities as they come: when an old school threatened to become hopelessly overcrowded he hit upon the plan of moving one class to a nearby community hall and gathered the men of the neighborhood, who were Seventh Day Adventists, to set up temporary privies on a Sunday because they would not work on Saturday; when he had persuaded another school board to buy new windows for an old building so dark that children had to study by artificial light, he worked with them on Armistice Day to cut the wall and set the windows in.

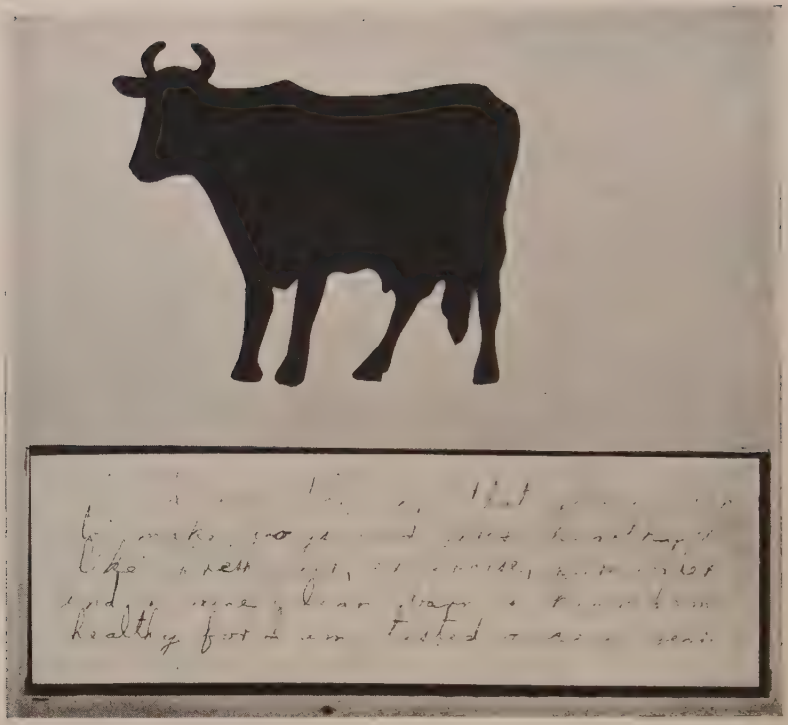
Tourist camps, industrial camps, and, beginning in 1930, food stores are routinely inspected, and the health department deals with special sanitary problems as they arise. For example, a large cannery on the outskirts of a small city was dumping its waste through a private sewer into

an open gully and so polluting a brook where several farmers watered their stock. The inspector arranged with the owners to extend their pipe line to a river where the flow was adequate to dispose of the waste. Such adjustments are likely to be necessary in growing communities which are neither urban nor entirely rural.

One of the most important steps which can be taken to protect a community—and particularly its children—from disease is to make sure of a clean and pure milk supply. Before the health unit appointed a dairy inspector in 1928, the only check on the quality of the milk sold in Salem was the annual inspection made by the state Dairy and Food Commission. In 1925 the state inspectors found that 70 per cent of the milk they tested was "dirty" or "fairly dirty," 30 per cent "fairly clean," and none of it "clean." In 1929, after less than two years' work by the county inspector, 6 per cent was "fairly clean" and 94 per cent was "clean." This refers to the actual dirt which appears as sediment in the milk and which can be screened out through a bit of cotton. Even more important is the purity of the milk—its freedom from the bacteria which may cause disease. In 1925, 81 per cent of the raw milk sold in Salem and sampled showed more than 25,000 bacteria in each cubic centimeter; in 1929, 88 per cent showed less than 25,000, and the average was 16,000. The usual requirement for Grade A milk is 50,000 or better. In 1925, six bottles out of every ten sold in Salem were pasteurized, but the pasteurizing was so badly done that all the samples tested showed more than 100,000 bacteria per cubic centimeter. In 1929, eight bottles out of every ten were pasteurized; 97 per cent showed counts of under 25,000 and the average was 8,500.

Improvement has come about through tactful educational work among both producers and distributors under the

THE DAIRY INSPECTOR SAFEGUARDS THE PRODUCTION AND SALE OF MILK. HERE HE IS TESTING RAW MILK BEFORE IT IS PASTEURIZED



THE THIRD-GRADE CHILD WHO MADE THIS POSTER KNOWS HOW IMPORTANT IT IS TO HAVE PURE MILK TO DRINK—AND DRINKS IT

authority of a special milk ordinance adopted by Salem in 1928.[1] Important changes were made in the pasteurizing machinery. The inspector made 604 visits in 1928 and 1929 to the dairymen whose milk is sold in Salem, pointing out how their methods could be bettered and persuading them that the right way to handle milk was also the profitable way. In 1928, for example, only one out of eight of the 160 producers had a milk house in which to cool the milk under sanitary conditions; in 1929 just half the 145 producers then selling milk had such houses and many more will be built in the summer of 1930.

The milk supply of Salem now compares favorably with that of other well-regulated small cities. For the three-fifths of the county's population living outside Salem no such complete protection is available, but the scattered dairies which produce milk for the city have undoubtedly done something to raise neighborhood standards. Beginning in 1930, the county dairy and sanitary inspectors became deputy state officers and they will be able to make some improvement throughout the county by enforcing the moderate requirements of the state code.

Genuine progress has been made in reducing the danger of disease from the environment in which Marion County citizens live. Much remains to be done.

[1] This was replaced in 1930 by the standard milk ordinance of the United States Public Health Service.

CHAPTER V

THE PLAN AT WORK: PREVENTING EPIDEMICS

THE PLAN AT WORK: PREVENTING EPIDEMICS

IN THE ideal community there would never be an epidemic. If doctors knew in every case how disease was passed from one person to another, if all citizens had a lively sense of responsibility to the public, and if the machinery of control worked without a hitch, the diseases spread by bacteria would disappear. But since we are still far from this state of things, one of the most pressing duties of the health department is to guard against epidemics. With all diseases of this type one defensive measure is possible: when someone falls sick the fact can be reported immediately to the health officer and the patient can be cut off from dangerous contact with his family and neighbors. With some diseases the behavior of the pernicious organism which is responsible for the infection is pretty well understood, and the health officer can act accordingly. With other cases—influenza, for example—the health officer and the private physician work in the dark, and must do as best they can. With a very few diseases—smallpox, diphtheria, typhoid fever, perhaps scarlet fever—the health officer not only knows what to do to keep the infection from spreading, but knows how to make the individual immune; he can actually forestall disease.

There is little information in the records to show how much was done to control epidemics in Marion County before the health unit made this one of its chief concerns. The part-time health officers took precautions when they seemed necessary: that is, when epidemics actually threatened. Often whole schools were closed because so many children were ill. Many people were vaccinated when smallpox was just around the corner, few at other times.

There were as we have seen many deaths from diphtheria, yet outside of Silverton, where the schools encouraged immunization, there was no popular movement to protect children against it.

The first step in the health department plan of fighting communicable diseases is to find the diseases. The law requires doctors to notify the health officer when he discovers certain kinds of infection, but unless there is steady pressure the doctor may forget, and in Marion County as in many other places the health officer has had to supply the pressure. He goes a step further by offering to help the doctor decide in doubtful cases what really causes the patient's illness and by securing laboratory service so that exact tests can be made to determine whether specimens from a sore throat, for instance, show the presence of diphtheria. He goes two steps further by sending nurses into the schools at frequent intervals (daily in Salem and Silverton) so that they may see children whom the teacher suspects of having an infectious disease and get them safely out of the schoolroom and under a doctor's care before the trouble spreads. Since constant watchfulness and immediate action are essential to check epidemic diseases, the health officer or some member of his staff is always ready to investigate a suspicious case. Between their visits to the schools, the nurses are often called by telephone to a school where a teacher or principal fears that a child is sick. Many threatening infections have been detected in early stages by prompt collaboration between the nurse, the family physician, and the health officer. The regular examination of persons engaged in handling milk has helped to prevent the spread of disease in a particularly dangerous way.

The next need is to shut the patient off from dangerous contact with other people. Quarantining the sick has two aspects: enforcing a rule and explaining it—showing

TAKING A CULTURE: A TEST FOR DIPHTHERIA INFECTION. THE NURSES ARE ON CALL TO HELP THE TEACHERS CONTROL DISEASE AT SCHOOL

THE HEALTH OFFICER IMMUNIZING SCHOOL CHILDREN AGAINST DIPHTHERIA. THE DEATH RATE FROM THIS DISEASE HAS FALLEN SHARPLY

the family how to fit their daily lives around it. By teaching rather than threatening, and by sending a nurse into the home to do it, the health officer has been able to keep his cases in safety with a minimum of irritation and opposition from the rest of the family. By close team-work with the schools, he has kept children from going back to their desks until they could do so without risk to their schoolmates. By mapping and studying the place and circumstances under which infection has occurred he is often able to trace the danger to its source and to keep watch over all those exposed to it.

Sometimes this sort of study reveals an uncommon disease. In 1927, for instance, several cases of what was thought to be typhoid fever were reported. On investigation the health officer discovered that the disease was really Malta or undulant fever, which is transmitted to human beings from sick cows by milk or water. The herd which supplied milk to these families was found to be infected; the raw milk was pasteurized, the local water supplies were chlorinated, and the disease was checked.

The best means of reducing smallpox and diphtheria is to prevent them. Smallpox, which is rife on the Pacific coast, is a constant threat in Marion County. There have been nearly sixty cases a year for the past ten years and in 1925 the number rose to the shocking total of 181. At that time there was no full-time health department; the responsibility for quarantine in Salem was left chiefly to private physicians; and the mayor of the city was among those who protested at the emergency regulations which were set up when smallpox appeared in the high school. The rapid spread of the disease opened the eyes of the public, the authorities saw the need of more orderly and continuous control, and the establishment of the county health unit followed.

It would be pleasant to report that smallpox has disappeared under health department control, but such is not the case. In 1929 there were 25 adult and 11 child cases. Marion County is not yet convinced that vaccination pays; it has not made vaccination compulsory for school entrance as it is in many communities. Salem lies on the highroad of travel up and down the coast. Infection follows curious bypaths. In the spring of 1929 a nurse found a child "broken out" and reported the fact to the health officer. He investigated at once and discovered that the daughter of the caretaker of a "Tabernacle" had smallpox. The family was uncommunicative, but the health officer looked up the preacher who conducted services in the Tabernacle. He had an interesting story to tell. Some two weeks previously a visiting evangelist had not only addressed a series of meetings but had shaken hands freely with the brethren and had practised "divine healing" by the "laying on of hands." The evangelist was also "broken out" and felt ill, but he considered it his duty to keep going and had not thought it worth while to consult a doctor. He finished his revival and traveled on to another town, but his "healing" left its mark: one of the elders, the treasurer, and twelve other persons besides the child—fifteen in all—had active cases of smallpox. The preacher, fortunately, was not so much opposed to vaccination as his sick elder and at the prayer meeting on the following night he stated the facts to his hearers, advised them to be vaccinated, and announced that the health officer was even then waiting in an ante-room to vaccinate all who would accept the treatment. Most of the congregation saw the health officer after the meeting, and thanks to a prompt search for all the other persons who had been exposed, and to general vaccination, the epidemic was held in check. But no one knows when the next wandering

preacher or traveling salesman or visiting school child may become a menace.

Naturally the health officer endeavors to reach as many children as he can and to vaccinate them before the danger shows its head, and when a case actually appears, all those who have been exposed are urged to protect themselves. School children and their younger brothers and sisters are given the opportunity to be vaccinated at special clinics held at schools and health centers throughout the county. In the last five years the health department has vaccinated 7,518 persons, 6,323 of them children in school, 629 younger children, and 566 adults. In 1925 approximately 32 per cent of the school children had been vaccinated; in 1929, 57 per cent were in the protected group.

The encouraging experience of Marion County with diphtheria has already been mentioned.[1] Since there are always a small number of children in the community who have this infection without being sick themselves but who can give the disease to others, it is hard to stamp it out entirely without wholesale immunization. When a case of diphtheria is found in a school, "cultures" are taken from the throats of all the pupils and in this way some of these diphtheria carriers are found and can be treated. Meanwhile the health officer goes steadily about the business of protecting as many children as possible by immunization through toxin-antitoxin, which prevents the disease in nine cases out of ten. At schoolhouses throughout the county and at health department headquarters in Salem, clinics are held at which toxin-antitoxin is given free to all children whose parents approve. In five years the health department has given this protection to 7,755 persons, of whom 6,356 were school children, 1,133 younger children, and 266 adults. As a result of this campaign, some 12 per cent of all

[1] Page 8.

children under six and 61 per cent of the school children were reasonably safe from diphtheria in 1929. More needs to be done for the preschool children, but the barrier in the schools, where children meet daily, offers some security to the homes as well.

Since 1927 the popularity of both vaccination against smallpox and inoculation against diphtheria has been increased by requiring children who wished to qualify for the annual "honor roll" in the schools to complete both treatments. In 1927–28 there were 1,910 children who won this distinction, in 1928–29 the total rose to 2,170. But the matter-of-fact way in which children who have not been protected march up to the physician for inoculation in the schools and the intelligent interest which the mothers show as they bring their babies make it clear that the people of the county have begun to understand what this protection is worth and to desire it for its own sake. It is interesting to note that a higher percentage of children are protected against diphtheria than against smallpox; local prejudice against vaccination dies hard, though its efficacy was established many years before toxin-antitoxin had been dreamed of.

Restricting the spread of tuberculosis and the venereal diseases is a particularly difficult problem, because they run a long course and the period of infection is correspondingly extended and also because there is still some reluctance on the part of doctors to report them. With respect to these two diseases the health department program in Marion County has not been as complete as would have been desirable. When tuberculosis is diagnosed by a physician and reported to the health department, a nurse visits the home and either urges the patient to enter the state sanatorium or in cooperation with the doctor, helps the family to arrange proper home care. The recent opening of a

In 1925 three school children out of ten had been vaccinated against smallpox

In 1929 nearly six school children out of ten were safe from smallpox

In 1925 no preschool children were known to have had toxin-antitoxin

In 1929 more than one preschool child in each ten was so protected

In 1925 no school children were known to have had toxin-antitoxin

In 1929 six school children out of every ten were safe from diphtheria

second state sanatorium has made it fairly easy for a patient who desires hospital care to receive it. Frequently the nurses make follow-up visits to check up on the condition of patients who have returned to their homes after a stay at the sanatorium. In the last four years nurses have made an average of 411 visits each year to an average of 67 active cases. There are many more unreported cases in the county.

The chief concern of the health unit is to prevent the spread of infection. As soon as a case is found, members of the patient's family and others who may have been exposed are listed and the nurse urges each of them to take all possible steps to discover whether he has been infected. Children whose condition, when they are examined at schools or health centers, suggests that they may have tuberculosis are also given an opportunity for a special examination. Skin tests are made and a chest clinic is held at health department headquarters in Salem for the careful study of such children and adults. Sputum tests are made where they seem to be necessary, but further tests such as X-ray examination must be made at the state hospital or by private physicians, and the health department has no facilities for making sure of a complete diagnosis on each case. There are no preventive services especially designed for children in danger of tuberculosis, such as summer camps or open-air classrooms, but the regular examinations in the schools often show up danger signals at an early stage, and the health teaching which tends to better the physical condition of all school children tends to increase individual resistance to infection.

When the examining physician at school or health center finds conditions which suggest the presence of congenital syphilis he suggests a blood test; if the parents cannot pay for this service the health department gives it free. Dairy-

men and others employed in the handling of milk are routinely tested for venereal infection. The treatment of such diseases is, however, left to private physicians and the health department has as yet no means of making sure that cases are under treatment or that they remain under treatment until the danger of spreading infection is over. In a few cases the health department gives treatment, at the actual cost of the materials used, to patients who are obviously unable to afford the fees of a private physician for this rather expensive care.[2]

The demonstration and health unit have set up in Marion County the machinery for systematic, continuous warfare against communicable diseases with the result that the schools are notably free from epidemics; have protected the majority of school children and many younger children against smallpox and diphtheria; and have added to the county's resources for checking the spread of tuberculosis and, to some slight degree, the venereal diseases.

[2] In 1930 this occasional service was developed into a regular clinic.

CHAPTER VI

THE PLAN AT WORK: GUARDING HEALTH

THE PLAN AT WORK: GUARDING HEALTH

ON THE picturesque Santiam River, tumbling out of the Cascades to form the southern boundary of Marion County, is the small lumbering town of Gates. During the child health demonstration, its 300 people had become accustomed to frequent visits from the demonstration physician and nurse. But half of the town lies south of the river and when the demonstration gave place to the Marion County Health Unit, there was danger that the Linn County half might be cut off from health service. So the Gates school board voted $300—just about a dollar per head for the whole district—to make sure that the town would still have help in guarding the health of its children.

The belief that such preventive service is worth dollars and cents to the community is relatively new. The first health departments busied themselves with fighting epidemics, and doctors traditionally cure the sick. But insurance companies have proved that prevention of disease—in the form of regular medical examinations and home teaching by nurses—saves lives and money. Health officers find that it costs less to forestall infection than to cope with it when it is once under way, and family physicians begin to see that preventive care, while it may seem to reduce the demand for the conventional "doctoring," really opens up new fields of profitable practice. The division of responsibility between public health and private practice is still tentative, but it is the health officer's job, at least, to educate the public to want such service and to provide health examinations at public cost for certain groups—particularly school children—in which the community has a special stake.

Marion County knew something of this type of health service in 1924, but its experience had been limited. In Silverton local physicians had examined school children as volunteers and the state board of health had held occasional "well-baby clinics." Salem had a school nurse with a long record of work behind her; volunteer dentists had made regular examinations for some years; and a part-time school physician made some examinations but gave his attention chiefly to emergency action when epidemics threatened. Outside Salem and Silverton the county nurse worked almost alone and even in Salem one nurse could hardly do as much home visiting as was needed to make sure that parents really took the examinations seriously and acted on the doctor's advice.

When the new program was set up in 1925 the demonstration physician—a child specialist—set to work systematically to check up on the physical development and state of health of babies, preschool children, and school children throughout the county, and district nurses—of whom there were now eight instead of two—followed the children into the homes when troublesome health problems were discovered. Health centers for babies and children under six were scattered over the county at convenient points. The schools, large and small, were visited in rotation by the staff doctor and the staff dentist.

THE HEALTH CENTER

An example of health center work under especially favorable conditions may be found in Silverton. This brisk little city occupies a position all its own in Marion County. Far outdistanced in population by Salem, it is nevertheless larger than any other city in the county; it is accustomed to hold its head up, mind its own business, and fend for

WEIGHING THE BABY: THIS HEALTH CENTER WAS HELD IN THE BASEMENT OF A VILLAGE CHURCH

HEALTH CENTER: THE DOCTOR EXAMINES THE BABY AND ADVISES THE MOTHER, WITH THE HELP OF A NURSE AND A VOLUNTEER RECORDER

itself. The admirable school buildings, the progressive school administration (both of which were fought for by a combination of doctors and women leaders), the hospital owned by a joint-stock company, the public swimming hole and wading pool, the unusual mileage of paved streets are symptoms of a lively public spirit.

Silverton women were already awake to the value of health work for their children and were cooperating with a school superintendent of like convictions before the demonstration was begun. When the opportunity for increased health service was laid before them in the summer of 1925, they accepted it eagerly. Steps were taken by the Parent-Teacher Association, the American Legion and its Auxiliary, the Loyal Legion of Loggers and Lumbermen, the Woman's Club, the Chamber of Commerce, and the Mizpah Circle—a typically Northwestern group of agencies —to form a community organization for health and social work. Funds were raised by community subscription; supplies for a permanent health center were secured and quarters assigned in a school building; volunteers were enrolled for a variety of services; and the campaign was on.

The story of the Silverton health center from the beginning is one of active, competent, enthusiastic team-work. The local committee takes responsibility for advertising the health examinations to the mothers of young children, makes the appointments for the health center, and unfailingly sends two or three volunteers to act as hostesses, to take the health history of each baby, and to record the doctor's findings. The health center is a big, well-lighted schoolroom, which on "clinic day" is partitioned off by sheets hung on wires so that there are a reception room, a dressing room, in which babies are weighed and measured before the doctor sees them, and an examining room. The nurse in general charge greets the mothers, assists the doctor,

and makes note of special points which need to be followed up in her home visiting. The doctor's careful examination of the child—throat, nose, eyes, ears, chest, and physique—is the starting-point for a thorough discussion of its condition with the mother. He may advise a change of feeding or a better schedule for the child's day or a visit to the family doctor or dentist for the treatment of some threatening handicap. In Silverton one or another of the local doctors usually turns up during the conference to assist in the examinations, or to watch the process, or to consult the examining physician about some particular difficulty that resists ordinary treatment. The mothers frequently report taking their children to the family doctor for regular supervision and come to the health center with their physician's approval simply for a general check-up.

A somewhat different story is found at Scotts Mills, eight or ten miles east of Silverton, a "city" with just 101 children of school age. Its one broad street, crossing the highway that leads down the valley and over the river into the next county, has its bank, its Christian church, its brown Quaker church, its garage, and its store or two. A good modern school, with 17 high-school pupils from the village and the outlying hills, perches on one of the close-crowding hills. There is no doctor in town; only one family has learned to take the children in to Silverton for regular visits to a doctor's office; there is little money unless the prune crop is better than usual; and the visits of the health unit staff loom large among the limited health resources of the community. Every baby in the village—except those born in the last year—has been examined. The mothers have made the most of the contact with the visiting doctor; one had a case of measles at home and was anxious to learn how to protect her other children and the schoolmates of the sick child; another was eager to know how to

prevent the spread of sore throats. One of the helpers at the clinic was a neighborly sort of person who habitually visited the sick and suggested homely remedies; she absorbed and passed on all the information she could get.

Another variation in the health center picture is seen at St. Paul, an old settlement in the flatland near the Willamette River with a Catholic church founded more than eighty years ago among the French-Canadian pioneers. Here a few women, wives of the more prosperous farmers in a community where comfort and poverty are near neighbors, wanted advice in the care of their own children, joined forces to get it, arranged health conferences in their own homes, and canvassed the neighborhood to bring in other children. Sometimes one of them would voluntarily take another family under friendly care and would visit much as a nurse might do, to share health information with the mother and to keep an eye on the progress of the children. Something similar was done on a community basis by the women of Mill City and Gates, who heard that the women of a smaller logging town twenty miles up the Santiam River wished to stage a health conference but were a little timid about the procedure. They packed up their portable scales and other health center equipment, took their lunches, and traveled up the valley to show their neighbors how to begin.

Interest in this kind of work has waxed and waned in one town and another according to local sentiment and leadership. One small city was much under the influence of a prominent woman whose youngest child was noted in a school medical examination as having a bad heart. She was annoyed at the report and her dissatisfaction had the effect of cooling the interest of the entire town. Later an older son of the same woman married; his wife had a baby who failed to gain and she brought the child to the health

center. The staff doctor was able to suggest a feeding which quickly brought the baby round. That converted the grandmother and she converted the town so that now a friendly atmosphere makes the health work genuinely useful.

During the early years of the demonstration much stress was laid on the formal development of local health councils. An elaborate plan was tried out, but eventually the independent agencies which were set up took their natural course and slipped back into the framework of established local groups. Now neighborhood participation in the work of the health centers is left chiefly to health committees of women's clubs, parent-teacher associations, or community clubs; in many of the smaller communities there is merely one woman or a handful of them who can be counted on to help whenever help is needed. Almost universally, however, there is a volunteer to keep the records of the doctor's examination so that the nurse is left free for the general management of the "clinic," and many of the volunteers take an active share in rounding up babies and children whose parents want them examined. The chief responsibility for finding such children and arranging for their examination rests, of course, on the district nurses.

The most intensive health center work has been done in Salem. At the end of the demonstration two health conferences were being held each week in the building used as headquarters of the health unit. At the height of the demonstration program 31 per cent of all the infants in the county[1] were being seen at the health center and these babies were coming, on an average, nearly four times a year. The only private physician in the county who special-

[1] Children under one year of age were classified as infants. Total infant population was estimated by including children who were infants at the beginning of the year (births of previous year less infant deaths) with the children born during the year.

izes in child care conducts one of the two conferences as a volunteer.

The purpose of this "health supervision" of babies and children is the same everywhere—to make sure that the child gets the kind of food and care that builds good muscles, skin, bones, and teeth, and to find in the early stages the handicaps which may be a serious disadvantage to the child as he grows older. Since the conditions under which children live, even in the famously healthy Northwest, are far from being those under which the human machine was developed, it is never safe to trust instinct and nature alone to bring each child to the peak of his possibilities.

The most important service of the health centers in Marion County was to get babies better fed. A child of twenty-eight months was brought to one conference after a too thorough application of the principle that milk is good for small children. The little girl had refused solid food and her mother gave her nothing but milk. She was much underweight, as white as a sheet of paper, seriously anemic, and afflicted with rickets. Every one of her fifteen baby teeth was decayed. She was so lacking in red blood corpuscles that the doctor to whom the mother took her at the advice of the examining physician tried to arrange a blood transfusion. But the change to a normal diet, together with some help for her weakened digestive apparatus, changed her so rapidly that this proved unnecessary. This was an extreme case, but many babies turn up at the health centers who are underweight or flabby or pale, because their mothers have prolonged this or that feeding beyond the time when a change was needed, or trusted too much in canned milk, or let the youngster's likes and dislikes interfere with its proper nourishment. The doctor and nurse between them have set many of these babies on the road to sturdy growth.

The Northwest, in spite of its freedom from some of the graver dangers which would be reflected in the infant death rate, is lacking in one essential for healthy growth—sunshine. Forest fires in summer, mist and rain in winter, obscure the ultra-violet rays which modern medicine has shown to be the best agency for insuring the development of sound bones. A special study of this question indicates that "Portland, Oregon, as a representative locality of the Northwest, has the lowest annual average of sunshine of all areas in the United States," although "Michigan, Maine, Vermont, New York, and the Ohio valley receive almost as low a percentage."[2] One out of six of the babies and children under six who were seen at Marion County health centers in 1926 and 1927 had a mild form of rickets—not serious enough to cause crippling, but serious enough to reduce the child's chance to attain normal bone development.

The lack of sunshine makes it all the more important to plan carefully the diet of babies and young children; in the health centers the physicians advised the routine use of cod-liver oil and the addition of vegetable joices to the baby's food at the early age of five months.

Sometimes advice of this sort has had conspicuous results. There is an old lake-bed in Marion County whose deep black peaty soil grows superfine celery. Much of it is worked on long lease by Japanese who have their own little villages of eight or ten families, living mostly in flimsy cabins and laboring hard and long. Mothers work in the fields almost to the hour of the baby's birth and the infant death rate (120.0) is almost three times that of the white babies in the county. Something has been done, however, for the children who survive, through nursing visits and through two health conferences. An English-speaking

[2]Ira A. Manville, M.D., "The Ultra-violet Component of the Sunlight of Portland, Oregon," *American Journal of Diseases of Children*, May, 1929.

THE NURSE SHOWS A MOTHER HOW TO PREPARE THE BABY'S FORMULA: SUCH HOME TEACHING GOES ON ALL OVER THE COUNTY

THIS YOUNGSTER'S STRAIGHT LEGS CAUSE ENVIOUS COMMENT IN A JAPANESE VILLAGE: HIS MOTHER GAVE HIM COD-LIVER OIL

father took the doctor's diet list and carefully translated it into Japanese for the benefit of his wife, who pinned it up on the wall for daily guidance. In a whole colony of bow-legged youngsters, there is one baby of eighteen months whose legs are so straight that they are the subject of envious comment from the neighbors. His mother, following health center advice, gave him cod-liver oil.

When there is sunshine, naturally, the sun bath is better medicine than cod-liver oil. But not all mothers are willing to risk it: one of them reported to the doctor at the health center that she gave her youngster regular sun baths, but it developed in discussion that the costume for the bath included a helmet, sweater and coat, leggings, shoes, and overshoes! Even in Salem passers-by still shake their heads at a youngster in a sun suit, but the habit of getting babies healthfully tanned is gradually spreading.

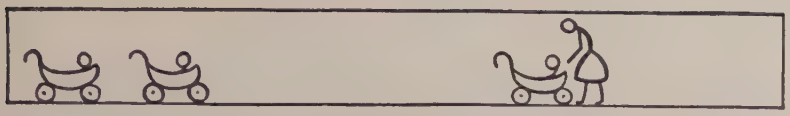
In the routine of the health center the doctor also paid attention to the infections of tonsils or ears, the ruptured navels, or the faulty feet which needed care lest they handicap the child's future development, and advised the mother to see her doctor whenever such conditions called for immediate treatment. The defects which were discovered in 4,200 health center examinations are tabulated on page 118.

The extent of this service depended primarily on the mothers, for the doctor could not go to all the children of these ages as he could to the school children, and the mother had to make the effort to bring them to the health center. This was made as easy as possible by holding health conferences at schoolhouses and other central points, and by distributing them as widely as local interest warranted and the time of the health workers allowed. At the end of the five-year demonstration nine afternoons each month were set aside for health center examinations in Salem, one a

month in Silverton, and one every other month in five smaller cities and towns. In the still smaller places conferences were arranged by the nurse whenever she found enough new and old babies to make it worth while for the doctor to come and see them. As the map (which forms the frontispiece) shows, conferences were scattered over the county in such a way that nearly every mother had at least one opportunity in a year to bring her children to a convenient center.

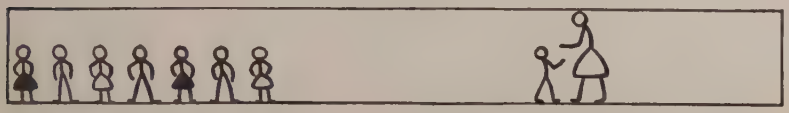
The percentage of Marion County babies who were examined increased steadily from 1925, when it was 5.9, to the last year of the demonstration, when 23.2 per cent—nearly one out of every four—were seen. The babies who came averaged nearly two visits apiece in 1929. The percentage of children between one and six who had this service reached its highest point in 1926, when 12.2 per cent were examined, and was somewhat lower (8.6) in 1929. These preschool children were also making in 1929 an average of two visits apiece.

The purpose of the health unit was not to give this service indefinitely to all children, but to demonstrate its value in the hope that mothers would ask their own family physicians to continue it. In 1929, as a step in this direction, the unit and the medical society agreed that all comers would be received at the health centers for one visit, but that no child would be seen a second time unless the family doctor consented. This regulation seems to have been responsible for the falling-off in health center attendance in 1929, not because the doctors objected, but because it put one more slight obstacle in the mother's way. There are no records to show how many well children were taken to private physicians for health supervision, but at least in Salem and Silverton certain doctors found a growing demand for such service. One physician who specialized in work for



In 1929 the nurses visited one baby out of every three

And the doctor saw one baby out of four at the health centers



The nurses visited one preschool child out of every eight

And the doctor examined one out of twelve at the health centers

One school child out of every six had a home visit from a nurse

And one out of every four was examined by a doctor at school

children found an increasing group of mothers who understood the value of consecutive care and were willing to engage him by the year for this purpose.

In Marion County as in many other places, the doctors themselves were not always sure just how to go about the task of examining a healthy child. In a number of cases those who wished to study the methods of the health department visited the health centers and worked side by side with the staff physician. Twice during the demonstration, institutes of two or three days' duration were arranged at which well-known physicians lectured on preventive care and discussed the cases which the local practitioners brought for study. All the medical work of the health department was discussed and approved by the medical society, which thus kept in touch with the whole program. The dentists were similarly consulted, and indeed the dental work of the health department was partly financed by the state dental organization which used the staff dentist as a traveling representative to set up similar work in other parts of Oregon. In all these ways the demonstration tried to carry out its two-fold purpose: "to create on the part of parents a desire for better health service as well as better general medical service, and to assist the organized medical profession of the county in providing a more adequate health service to the families under their care."

An interesting sidelight on the effect of all this effort to better the health of preschool children is to be found by comparing the condition of the children who entered school in 1926, with little health service behind them, and those who entered in 1929, when a considerable body of children had received more or less public health care. The following table shows how the two groups rated in the percentage of moderate and severe defects discovered in the first-grade school examination:

PERCENTAGE OF FIRST-GRADE SCHOOL CHILDREN EXAMINED SHOWING CERTAIN DEFECTS

(*Ratings of Moderate and Severe*)

	1926	1929
Underweight	7.9	3.4
Vision	2.4	0.4
Tonsils	44.7	25.9
Nasopharynx	6.4	2.0
Thyroid		
Slight	34.6	13.7
Moderate and severe	3.0	0.4
Skin	1.6	0.4

While these two sets of examinations were made by different physicians, and some variation may be due to differences in method of rating, standards have been carefully compared and the figures seem to indicate that the later crop of youngsters was distinctly better off.

Another comparison which suggests that this service may have had a real influence in bringing the babies and children who were examined to a better level of health may be drawn from a special study of 5,716 children weighed and measured at the health centers. While the Marion County children who came to be examined were materially heavier at every age above one year than the average for the United States, the babies seen in the last two years of the demonstration, after three years of health work, were even heavier than those seen in the earlier stages of the program. The difference is not great enough to be very conclusive and the lack of comparative figures for the babies not examined makes it hard to determine just what the record is worth. But it is a fair inference that this bit of evidence agrees with that of the vital statistics and that the effect of the health work in Marion County has been to better the lot of children who were already better off than many of their cousins in other parts of the country.

THE SCHOOL EXAMINATION

"This is a wonderful age of progress. Scrub livestock is rarely found on an up-to-date farm any more. We have thoroughbred horses and pure-bred hogs, and cows with world records. We have county agents to look after the grain and hay crops and a fruit inspector to fight the fruit pests. All of these things cost money and taxes are high. For this reason we cannot bother with the physical welfare of children. Hogs are inoculated against cholera for if a hog dies it means a financial loss to the owner. Children just naturally have measles, scarlet fever, chicken-pox, and other necessary diseases of childhood. If a child happens to die of one of these maladies, people shake their heads sadly and call it an act of Providence 'whose ways it is not given mortals to understand.' "

So the Marion County superintendent of schools wrote in 1923. Fighting almost single-handed for better care of rural school children, she had the satisfaction soon afterward of seeing a county nurse at work and in 1925 the child health demonstration set in motion a plan to give country and city children alike the benefit of systematic health services. The steps taken under this plan to improve school sanitation and to ward off epidemic disease have already been mentioned; the following chapter will describe health teaching; here the regular medical and dental examinations will be considered.

Twelve thousand times, in the past four years, a physician from the demonstration or health department has studied a school child; has noted how the child holds himself, whether he is firm and ruddy or soft and pale, and whether his tonsils, teeth, eyes, and ears are in good shape; has listened to his breathing and his heart; has thumped his bare chest and back to find evidences of lung disorder; and has made a rapid but shrewd estimate of his general

health assets and liabilities. Twelve thousand times the results of such inventories have been written down on records where the teacher and nurse could study them and judge what help the child needed. Nearly four thousand times the doctor has discussed the child's condition with a father or mother who sat beside the child and watched the process. Every time that a serious disorder showed itself, the condition has been called to the parent's attention, in conversation or by a written notice, and a visit to the doctor or dentist has been suggested.

These twelve thousand examinations have been held in large city schools with convenient health rooms, in small country schools where the youngster peeled off his overalls and sweater and woolen undershirt (Marion County children are thoroughly dressed) in cramped quarters behind an improvised screen. Every school has had an opportunity to secure such service every year, or nearly so, and if the doctor could not come to the school for a handful of children arrangements have been made for the children to come to the doctor at a larger school nearby. For three school years the demonstration offered to examine any child whose parents applied for the service; in 1928–29 the doctor saw children in the first and fifth grades at the request of the parents, and other children if there was a special reason for doing so. In 1929–30, when parents the county over had had plenty of opportunity to make up their minds whether the examination was desirable or not, the health unit began to examine all children in the first and fifth grades unless the parents definitely objected. The high point of service came in 1926–27, when two children out of every five enrolled in the elementary grades were examined; at the end of the demonstration about one child out of five was being seen each year.

Taken together these children showed few serious handi-

caps.[3] About one out of every eight was seriously underweight; nearly two out of ten had tonsils so badly infected that a doctor's care was desirable; and one out of twenty had a considerable thyroid enlargement, for in Marion County too little iodine is contained in foods and drinking water to assure a normal condition of these glands. There were few children, however, who did not show some slight disorder which interfered more or less with normal living, and many were in the state which the doctor describes as "unsatisfactory nutrition," which is about what the layman means when he speaks of "poor condition"—pale, flabby, lacking in resistance to disease.[4] Slightly enlarged tonsils, "sniffles," and nasal obstructions were common. Skin troubles—particularly impetigo (or "infantigo" as it was often called)—were more numerous than would be expected in a community where gross uncleanliness was rare. Stooped shoulders and drooping heads were frequent. Slight enlargement of the thyroid glands was general.

In the course of a typical school "clinic" the examining doctor would find occasion to discuss the value of a hearty school lunch, the choice of foods at breakfast, the danger of too many sweaters, the value of iodized salt, the need of holding the chin up and the stomach in, the reason for evening headaches, the need of good lighting to avoid eyestrain, the way to avoid skin disease. Not infrequently a youngster appeared with a piece of red flannel pinned across the chest to prevent colds and the doctor pointed out better ways than that. A charm around the neck gave him an opportunity to laugh off a bit of superstition and drive home a bit of common sense.

[3] Moderate and severe defects are tabulated on page 118.

[4] For psychological reasons, the examining physician graded nutrition conservatively; the parent was likely to misunderstand the significance of the term and it seemed better policy to lay stress on the condition of tonsils or teeth, which presented a clear-cut picture. The amount of unsatisfactory nutrition is therefore not fully indicated by the tabulated findings.

SOMETIMES THE PHYSICIAN WORKS IN CRAMPED QUARTERS, BUT HE EXAMINES FIRST AND FIFTH GRADE SCHOOL CHILDREN THROUGHOUT THE COUNTY

EVERY SCHOOL CHILD IN MARION COUNTY HAS A DENTAL EXAMINATION ONCE A YEAR

In 1929 the dentist made 12,677 examinations

In 1929–30 the examination was extended to the junior and senior high schools in Salem and Silverton, as a natural sequel to the work done during the demonstration in the elementary grades. Striking evidences were found that the older children as well as the younger ones needed frequent health audits. A junior high-school boy who had recently come to Marion County proved to have such poor vision that he was lucky to be able to study at all; when he was provided with glasses his chief satisfaction was in being able to see Mt. Hood for the first time. A girl of the same age who had been examined twice before was being urged by her mother to stand up straight; the doctor found a double spinal curvature which had just become apparent and which was promptly put in a cast by the family physician to whom the mother hurried her. In a group of some 500 high-school girls examined in 1930, one out of five was found to have slightly or markedly unsatisfactory nutrition.

The work of the staff dentist blanketed the county even more completely than that of the staff physician. In 1926, his first year of service, he examined the teeth of 5,569 school children; by 1929 he had worked up to the astonishing total of 12,677 in a single year.[5] The routine was to examine the mouth of every child in every school and in 1929–30 the dentist completed this task, with the exception of one remote mountain school attended by one family only, by the middle of February. Out of a total of 21,725 school examinations, 11,880 or 55 per cent showed at least one tooth in need of a dentist's care. In each of these cases a

[5] This includes some duplication, as certain children were seen in the late winter or early spring and again in the following autumn.

card was given to the child with the suggestion that he go to his dentist, have the decayed teeth filled or extracted, and return the card with the dentist's signature. A limited number of children whose parents were known to be unable to afford the cost of treatment were cared for at the dental clinic maintained by the demonstration and health unit. Private dentists did much of the free work in 1926 and 1927, but the staff dentist took full charge in 1928. A total of 458 children (including a few of preschool age) received 1,958 treatments at the clinic. Silverton dentists took pride in caring for their own indigent cases, instead of allowing them to go to the county clinic.[6] The effort to get school children under care in one way or another met with a considerable degree of success: in 1929 five school children out of every ten needed treatment, and three out of ten—60 per cent of those who needed it—actually had treatment.

While it is a very desirable thing to establish the habit of regular examinations by doctor and dentist and to continue them throughout life, the examination itself accomplishes nothing. It is the change in the child, in his way of living or his physical condition, that matters and this change will take place only if someone does something about it. The parents, of course, carry the ultimate responsibility for this change, but in many cases—even in Marion County—they needed help. The report of the health center examination was regularly sent, during the demonstration, to the family physician, who was sometimes interested and sometimes not. The record of the school examination was filed in the teacher's desk; she was usually (not always) interested, but in many cases she felt that her reponsibility ended at the schoolroom door. It was the nurse whose business

[6] The lack of facilities for free treatment other than dental care was a serious obstacle to the effort to free children of physical handicaps. The local hospitals had no out-patient service, and public funds for relief were so limited that little corrective work was paid for by the county.

it was to see that the child's condition really was changed for the better; it was she who carried the teaching of health into the home.

Since the nurses had a finger in nearly all the activities of the health department they appear in nearly every chapter of this report. But this may be as good a place as any other to sum up their share in the common task of guarding and building health.

WHAT THE NURSES DID

In Marion County each of the seven nurses who were at work at the end of the demonstration was especially concerned with the health needs of perhaps 7,000 people. Three of the seven worked in Salem and its immediate environs; the other four divided the rest of the county by districts which roughly followed the natural grouping of towns, schools, and highways. Within her own district each nurse had definite responsibilities. At the end of the demonstration she was visiting the larger schools twice a week, or weekly, or every other week, as her schedule permitted, attending to minor hurts, consulting with the teacher, sending home the children who might be a source of infection, sometimes teaching special classes in child care and personal hygiene.[7] She set the stage for the school examinations, assembled the helpers, kept the machinery going, and followed the doctor's suggestions into the home when children needed special attention. She undertook to visit at least once all the babies born in her district, kept track of the preschool children, shared with the local volunteers the job of interesting mothers in the health center, made the arrangements, and did

[7] In 1929, nurses made 12,915 individual inspections, excluding 1,043 children; held 5,045 conferences with teachers; and gave 461 talks or formal lessons in the classroom.

some follow-up visiting. She prepared for the immunization clinics, helped the health officer at work, and sometimes gave the inoculations herself. She called on families where there was a case of epidemic disease, established quarantine when the disease was officially recognized, and taught the family how to observe the letter and spirit of the regulations. She cared, when she could, for those who were sick with non-infectious diseases, sometimes collecting a fee from the family or from the Metropolitan Life Insurance Company for such service, sometimes giving care to those who could afford no fee.[8] She visited expectant mothers and cared for women just after childbirth. If these routine duties left any time free, she used it for general home teaching—passing on a bit of tactful advice to an intelligent mother who wanted help in the homely details of the child's daily life; wrestling with an unresponsive family which was balking the teacher's effort to influence the child's health habits; or keeping an eye, with the family physician's approval, on the babies who did not come to the health center. In hop-picking time the crowded camps of the pickers—some from neighboring villages, some from outside the county—needed frequent attention, for small cuts had to be protected, children with sore throats had to be watched lest serious infection spread through the camp, skin diseases had to be kept from running wild, and once in a while a new baby had to be cared for under circumstances which to say the least were unpropitious.

The nurses in Marion County were on duty 41 hours a week, beginning their day, usually at a school building, at eight-thirty. In 1929 each nurse devoted about eight and one-half hours in the average week to home nursing visits; not quite seven hours a week to work in the schools; not quite three to health centers; a little more than three

[8] These fees now pay the greater part of the salary of one nurse.

THE BORROWED BABY WAS MORE NONCHALANT THAN THE HIGH-SCHOOL GIRLS AND BOYS WHO STUDIED BABY CARE AT WOODBURN

THE NURSE TALKS POSTURE. THIS SCHOOLROOM IS TYPICAL OF THE NEWER TWO-ROOM BUILDINGS

to conferences with local committees and to special teaching jobs like neighborhood classes in home hygiene and care of the sick. It took about seven hours a week to drive the Fords from one job to another, for Marion County spreads over more than a thousand square miles. Seven hours were needed for office work, and five and a half for sick leave and vacation allowance.

Multiply this average week by 52 and the average nurse by eight (the number of nurses on the staff in 1929), and the total time spent in nursing visits alone, in 1929, mounted up to 3,849 hours. In this time the nurses made 9,402 visits. Health supervision accounted for a little more than half of them, with the rest divided between cases of communicable disease (including tuberculosis, to which special attention was paid), the care of persons sick with other diseases, and the care of expectant and newly delivered mothers.[9] Putting the facts another way, the nurses made 1,980 visits to 563 babies—about one in three of all the babies in the county;[10] 1,684 visits to 687 preschool children—about one out of every eight; 3,260 visits to 1,570 school children—one out of six; and 2,478 visits to 524 adults—one out of seventy.

The work which was done to guard the health of women at childbirth deserves fuller discussion. The health of mothers is of double importance to the health department: the deaths and disorders associated with childbirth are a severe drain on the resources of the community, and it is a loss of time and effort to begin child health work after the child is born, for then his physical assets and liabilities are already to a large extent determined. Guarding the health of mothers is primarily the task of the family physician, but the health officer can stand by to urge pregnant women

[9] See the tables on pages 119 to 121.

[10] See note on page 56.

In 1929 the nurses visited one expectant mother out of every six

to put themselves under the doctor's care and can reinforce the doctor's influence by sending his nurses into the home to teach the principles of prenatal hygiene, especially as they affect the unborn child.

In Marion County it is only the exceptional mother who fails to make intelligent preparation for her baby and to engage a doctor for delivery. One mother was found who had relied on her husband's help at the birth of twelve children and survived to bear a thirteenth under orthodox care, and occasionally a baby would arrive at the hopyards in a more than ordinarily casual way. But midwives were unknown, and one mother out of five, in the first year of the demonstration, was going to a hospital for delivery. Some physicians were giving regular prenatal care, but in many cases the quality of this care—as is usual in the United States—left something to be desired.

The demonstration nurses found in this situation an opportunity to do something to educate mothers to take better care of themselves in pregnancy and to make more use of medical care. They learned of prenatal cases in various ways; about a third of them were referred to the nurses by the doctor in charge, and many more were reported by the mothers themselves, or by friends and neighbors. The nurse visited the home to advise the mother to see her doctor promptly and frequently, to help her plan for her delivery, and, under the doctor's direction, to make sure that her diet and general hygiene were such as to protect both herself and the child. The health department offered

for loan or rent the sterile supplies necessary for use when the baby was born at home, and in a limited number of cases the nurse assisted the doctor at the birth of the child. Under the doctor's orders, again, the nurse made frequent visits after delivery to care for the mother and to help her to get the appalling schedule (if it was a first baby) under way, or to improve on the methods she had used in feeding and bathing the older children. Some one of these services, or some combination of them, was given to one mother out of five in Marion County in the average year of the demonstration period, and the nurse made an average of seven visits to each mother cared for. In 1929, when 21 per cent of the mothers had some form of nursing care, 17 per cent were visited during pregnancy, 12 per cent had both prenatal and postnatal service, and a little over one per cent had prenatal, delivery, and postnatal care.[11]

The fact that there were no deaths in childbirth among the mothers receiving prenatal nursing service indicates that they were under good care. A large percentage of the mothers seen by the nurses—averaging 84 per cent for the last four years—had medical care during pregnancy and most of them had seen their doctor at least once before the nurse called. Forty-one per cent of these mothers saw their doctor before the fifth month, 89 per cent before the ninth month. The nurses may perhaps have influenced these women to make more frequent visits to the doctor; the average of such visits per patient rose from 3.6 in 1926 to 5.7 in 1929. One prominent physician comments that

[11] Nursing service at delivery, for which a fee was charged, reached its maximum in 1927, when the public health nurses attended nearly one birth in ten. Service at delivery was given to 42 mothers in 1926; 82 in 1927; and 74 in 1928. It fell off sharply to 13 cases in 1929 when the health unit, in order to link it more closely to the educational purposes of the maternity nursing program, restricted it to women who had registered with the nurses before the fifth month of pregnancy. The percentage of mothers receiving prenatal care increased steadily throughout the five years of the demonstration.

he has had to give up obstetric practice because women now expect so much more care than they used to. The percentage of mothers delivered in hospital has also increased from 21 in 1925 to 32 in 1929,[12] but it is doubtful whether this is due to the nurses' influence so much as to a gradual growth in the appreciation of hospital care. One doctor in Silverton refuses to accept obstetric cases unless the mother—if it is her first child—goes to the hospital. Marion County has the advantage of good medical service and exceptional medical leadership, is reasonably well supplied with hospitals, and is relatively free from gross ignorance and poverty. The nursing service could hardly have been expected to bring about any dramatic change in the prevailing standards of maternity care, but it does seem to have played a part in the substantial lowering of the maternal and infant death rates.

Once a baby is born in Marion County the health unit stands ready to guard his health with all its resources. The nurse tries to visit every new-born child. The county provides a health center where his development may be watched and his mother's questions answered. The health officer keeps an eye on the milk and water he drinks, isolates the children who might infect him, and stands ready to make him immune to smallpox and diphtheria. When he goes to school a doctor and a dentist will examine him, his teacher and the nurse will concern themselves with his health progress, and he will be taught in ways that he can understand how to make the most of his physical equipment. It is no longer true that Marion County "cannot bother with the physical welfare of children."

[12] These percentages are figured on the total births in Marion County, including those to non-resident mothers.

CHAPTER VII

THE PLAN AT WORK: TEACHING HEALTH

THE PLAN AT WORK: TEACHING HEALTH

FAIRVIEW SCHOOL gets its name from the rolling prune-covered hills which surround it in the southwestern corner of Marion County. The road which leads past it was once a main highway, but carries little travel now. There is no church, no store, no village, but twenty to thirty pupils come in from the scattered farmhouses lying a mile or more from the school. The building is like a score of others in Marion County—neither modern nor decrepit, uninviting, but not quite hopeless, generally undistinguished—a typical one-room school.

But Fairview has a one-room-school teacher who is by no means typical. She has taught there for five years, coming and going daily from her home in the city, and she has made the school a center of neighborhood interest and a broadcasting station for health. It will be worth while to tell in some detail what has happened at her school in the last five years as an indication of what Marion County rural schools at their best can accomplish.

When this teacher began work five years ago she found little support for her feeling that the school ought to do something about health. She knew that it was important to guard against epidemics, but when smallpox appeared in the neighborhood she could not get the part-time county health officer interested in the matter and she herself took a hand with the doctor on the case in seeing that quarantine was observed. None of the children in the school, except her own, had been protected against diphtheria. The county nurse had visited the school just once. The parents were apathetic.

She began to tackle her job by learning the community root and branch. After school and on Saturdays she visited

the homes until she had a pretty clear picture of just what the children had, and lacked, in the way of home care. She saw that the youngsters who got up at five-thirty or six for an early breakfast and a long walk to school needed something to eat during the morning, and arranged a recess so they could have it. She used a large pan of water on top of the schoolroom stove to warm lunches for the noon meal. She planned her teaching so as to make use of the new health material that began to be circulated from the demonstration office. As she became well acquainted with the neighbors, they began to ask her questions about the care of their children; with the help of the new nurse, she answered them as best she could, and as time went on she watched the nurse, too, win the confidence of the community and take her natural place as a health consultant and adviser. Though everyone said it could not be done, the teacher called a meeting to organize a community club and proved to the surprised neighbors that they could enjoy each other thoroughly; the club still flourishes and its meetings jam the schoolhouse.

Three years she kept plugging away without arousing much interest in the new ideas of child health, but by the end of that time she began to see a change. The parents became interested in the doctor's examination of the school children and were slowly persuaded to act in accordance with his advice. Several pairs of tonsils came out. In 1929 every child but one qualified for the honor roll—which means that each one was keeping the health rules reasonably well, was free of serious physical defects, and had been vaccinated against smallpox and diphtheria. A quarter of the pupils now make regular twice-a-year visits to the dentist, and the public health dentist who examines all the teeth comments on the improvement in their care and condition. One little girl whose tonsils have been getting

FAIRVIEW SCHOOL: THE YOUNGSTERS HERE WILL SOON SCATTER FOR PLAY, BUT THEY TAKE HEALTHY LIVING SERIOUSLY

THIRD-GRADE STOREKEEPERS MADE CHANGE, KEPT ACCOUNTS, LEARNED ARITHMETIC, AND INCIDENTALLY MADE MILK-DRINKING MORE AND MORE POPULAR

worse for three years will have them out this summer; the teacher considers every such case as her personal problem and uses all her powers of persuasion to get every child free of handicaps and protected against disease.

Meanwhile the school itself has been improved. Originally painted blue and three dingy shades of brown, it is now a modest but more cheerful cream. A range has been set up for easier cooking of the hot lunches. The building has been enlarged and a basement added; when there is money to furnish it, the basement will be a kitchen where community suppers can be served. Windows have been rearranged to eliminate cross-lighting. There is no bubbling fountain yet, but the children use individual cups at the pump, and a water cooler with a rubber tube and spray is put to the novel use of holding warm water for hand-washing in cold weather. Next year the school board has promised to improve the outside toilets.

It would take too much space to enumerate all the ways in which health has been taught in this school. The teacher has used all the grist that came to her mill—health bulletins from the demonstration, the county course of health instruction, advertising schemes. Reading and writing lessons have often been reading and writing about health. Art lessons have produced health posters. Booklets illustrating the right choice of food and well-balanced meals for children have been made and taken home and the mothers show their interest by discussing these housekeeping details with the teacher. Health plays have been made out of health readers and acted by the young playwrights. Paper dolls climb up paper hills to mark the progress of the children who make them toward standard weight. The morning inspection with its emphasis upon cleanliness has flowered into a course for the girls in shampooing and manicuring. The sanitary survey of the school, which all county children are

now encouraged to make for themselves at the beginning of the year, has been built up at this school into a "research" project: boys visit other nearby schools and study various types of water supply and waste disposal. The county milk inspector has visited the school to talk about clean dairying, and has taken samples of milk to analyze. Water samples from home wells have been tested. Health bobs up often at the "exercises" which the children plan for themselves once a week. Here, for example, is an essay on teeth which an eighth-grade girl read as her contribution to one of these programs—a little weak on bacteriology, perhaps, but full of practical considerations:

We should take good care of our teeth. Because our teeth chew up our food, help us talk, and make our faces look better.

We should brush our teeth at least twice a day.

Before a baby is a year he starts to get his first teeth. The baby teeth should be taken care of too. There are twenty teeth in the first set. When we are about six years old our teeth begin to come out and our second set starts coming in. There are thirty-two teeth in this set. These are the permanent teeth.

On the outside of the teeth is a hard enamel. We should not crack nuts with our teeth, or pick our teeth with pins, because it will crack the enamel and cause the tooth to decay.

If we do not keep our teeth clean the germs will get on our food. They will be carried down into our stomach and may cause illness.

It will not do the teeth any good to brush them with a dirty tooth brush.

Sometimes our teeth will decay anyway. Then we should go to a dentist.

The leadership which this teacher has won in her community and the degree of responsibility she takes for the health progress of every family in it are above the average for Marion County. But throughout the county schools this story of growing attention to health could be more or less duplicated. Some schools excel in one phase of the work, some in others; some teachers find health teaching a

spur to originality, some make it a routine task. Schools and teachers vary widely: good teachers do good health teaching and no way has been found to raise the level of health work above the general performance of indifferent and poor teachers. It is surprising to find in a remote logging town like Detroit, at the very end of the hard road that leads into the tall timber, a pleasant little school with an oil stove for the cooking of hot lunches all winter, with running water and liquid soap for hand-washing, and with a substantial play-shed for use in wet weather. It is equally surprising to find the larger schools doing so little to promote milk-drinking through the milk-lunch in the classroom. But almost everywhere one goes the teachers do know how many of their children have been immunized against diphtheria and smallpox, how many of them are underweight, and how many of them present serious health problems. Health teaching has an established place in the state and county courses of study.

Donald, in the northwest corner of the county, is the oldest school district. Both of its teachers are in thorough sympathy with the health program and are cooperating in it. The teacher of the younger grades, in typical fashion, draws on all the available material to keep children interested: an Ivory Soap contest, for example, is used to stimulate bathing and personal cleanliness; Metropolitan Life Insurance Company booklets on health subjects are loaned to the fourth-grade children for their silent reading. The little Chinese girl in brocaded black silk keeps the health habits along with her white classmates. In the older grades, ten out of the sixteen children in attendance have had their tonsils out. All of them know what dental work they need and most of them will have it done by the end of school. The teacher comments on the new freedom from epidemics which has come since the health work began.

This is a school which has eagerly accepted all the help it could get, children turning out 100 per cent for the early medical examinations.

Gates is a small district in the hills on the southern border of the county. With a big acreage of valuable timber-land to tax, its revenues are generous. Through a curious rivalry between Gates and its larger neighbor, Mill City, Gates has its own high school with seventeen pupils and a separate building. In the basement is a cheerful lunch-room where a hot lunch is cooked for both grade and high-school children. At one of the honor roll examinations the children were fairly on their toes awaiting the verdict as to their physical qualifications. One little girl of seven had walked three times the distance of six miles from her home to the dentist's office to have her teeth fixed. She was proud to report that she had not only been vaccinated but had had the "tixie-toxin" to protect her from diphtheria. A teacher in the grade schools remembers gratefully how a boy with a bad case of rheumatic fever improved after the examining physician persuaded his mother to have his two abscessed teeth extracted.

Woodburn is one of the more important cities of the county and proclaims itself "the world's berry center." In its modern high-school building the home economics department runs a cafeteria where nourishing food, well cooked, is served at a nominal cost. The girls study their own diet while they learn cooking, and healthful principles of clothing while they learn dressmaking. Every year the school runs a "fashion show" for the benefit of the out-of-town youngsters who are about to enter high school, and the teacher all but makes the wearing of low heels a requirement if a girl is to pass her course. Boys study personal hygiene in their science classes. In the grade school two or three teachers are doing exceptional health teaching

with the help of 4H Clubs in the higher grades. Eighth-grade children build model farms in their agricultural course and discuss the feeding of human beings as well as live-stock. When the nurse gave a course in baby care the boys as well as the girls wanted to take it; a separate class of boys was organized, and though they begged the nurse to stand guard at the classroom door so the girls would not see them bathing the baby, they thoroughly enjoyed it. Third-grade children "talk indefinitely" when the teacher reads them health stories and invites them to discuss what they have heard.

Scotts Mills has a small but enthusiastic student body; the 35 high-school children matched contributions from the Parent-Teacher Association and the alumni to put a heating plant in the gymnasium which the school board built at a cost of $2,000. Scotts Mills has had one or two unpleasant experiences with quarantine, but the teachers report a growing understanding on the part of the parents of the importance of keeping sick children out of school, and the principal has community support in the policy of sending children home whenever they have colds.

Most of the health work in the schools, of which these are scattering illustrations, is a development of the last five years. Before 1925 the only health teaching required was a two-year course in hygiene in the fifth and sixth grades, prescribed by state law and reaching its climax in an examination at the end of the sixth grade. A few teachers on their own responsibility were teaching good health habits in their classes. About the time when the demonstration began, a new state law directed teachers to make a physical inspection of their pupils at the beginning of each school year. On these meager foundations the school health program has been built up through the cordial team-work of the county superintendent of schools, the city superin-

tendents in Salem and Silverton, some of the parochial-school authorities, and the demonstration.

The demonstration started the ball rolling by employing a director of health education who was given official status in both the county and city school systems and who made it her business to meet teachers at their institutes and group meetings, to visit schools throughout the county, to prepare study outlines, and to distribute teaching material. In all these ways she stirred up a very general interest in the child's health as a vital objective in elementary-school teaching. The purpose of the new program was not to transmit information to the child so much as to interest him in his own health progress and to implant the habit of eating, sleeping, washing, playing, and resting in ways which tended to improve his condition day by day. A systematic outline of health teaching was incorporated in the county course of required study and even if this resulted in a certain amount of perfunctory teaching, it did give the interested teacher a framework for her individual efforts. Toward the end of the demonstration, several Marion County teachers were appointed members of a committee to revise the state course of study so far as it related to health. Building on the experience of the county, they wrote a course which instead of beginning in the fifth grade and ending in the sixth, began in the first and ended in the eighth, and abolished the final examination, so that the goal of instruction was no longer a set of facts but a way of living. Teachers were urged to give at least fifteen minutes each day to the process of interesting the child in the formation of health habits, devoting part of this time to the morning inspection and to keeping tally on a check-sheet of the performance of the health habits. Subject-matter was prescribed in some detail under the headings of safety, cleanliness, nutrition, teeth, exercise and

FIRST-GRADERS, EAGER TO BECOME "PILOTS" IN THE "CLEAN TEETH TRANSPORTATION COMPANY," WILLINGLY VISITED THE DENTIST AND BRUSHED THEIR TEETH REGULARLY

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vegetables

SECOND-GRADERS READ ABOUT "BODO," DREW PICTURES OF HIM, AND PROUDLY FOLLOWED HIS EXAMPLE: AN ELABORATE TEACHING PROJECT

fresh air, clothing, rest and sleep, posture, the sense organs, tobacco, alcohol and narcotics, and mental hygiene. An adaptation of the entire course for the use of rural schools with several grades in each room was also suggested.

Nine parochial schools, following the same course of study as the public schools, felt the influence of the new emphasis on health teaching. The Mt. Angel Academy and Normal School, which trains many local teachers, became a center of special interest. In 1926 the supervisor of the Normal School invited demonstration workers to give a course in Methods of Health Teaching; three years later, after special preparation, she assumed responsibility for teaching the course herself, and she now makes it a requirement for graduation. The participation of the parochial schools in the routine medical and nursing services is of course left to the discretion of the local church authorities, who make increasing use of the facilities offered by the health unit.

The teacher's physical inspection of children at the beginning of the year presented a problem of some difficulty. Few teachers knew how to go about it and the nurses in Marion County devoted a good deal of time to coaching them. Since the doctor's and dentist's examination in the county schools was not only more complete but more accurate at many points where a layman's judgment was likely to be uncertain, the Marion County schools eventually modified the plan with the approval of the state authorities. The present arrangement is that at the beginning of the year the teacher takes the child's height and weight, notes the difference between the actual and normal weight, tests vision and hearing, notes whether the child is a mouth breather, records the condition of his teeth and any noticeable orthopedic defect. These findings are entered on a card which is later used by the examining physician and

dentist for their report. Space is left for a record of immunizations and important corrections of defects, so that all the useful information about a child's health standing is kept together in one convenient form for reference. This record is kept by the teacher in a loose-leaf binder. It is planned to use the back of the card in the county schools for the academic record as well.

The tendency of such a plan as that which has guided health work in the Marion County schools is to bring about a gradual improvement in the general level of children's health. To speed up this improvement by making the health goal more attractive to the child and by advertising it to the parents, it was announced in 1926–27 that children reaching a certain standard of health achievement would be put on an "honor roll." To qualify, they must be free of physical defects which could be remedied; must be "reasonably cooperative in the practice of the health habits"; must show satisfactory behavior and attitude in school and make an average grade of "B." The staff physicians would examine children to determine their freedom from defects. The plan aroused great interest; four thousand children entered the race and 2,211 finished it. In April the winners marched through the streets of Salem with the governor of the state at their head, carrying banners and wearing costumes which dramatized the work they had done.

It was a considerable strain on the staff physicians to make all the examinations and re-examinations which this plan called for, in addition to their regular schedule of service, and in the following year the award was offered to children who secured the correction of certain specified defects, met the other established conditions, and in addition, became immunized against smallpox and diphtheria. Fifteen more small schools entered the campaign, bringing the

total up to 109, and 1,910 children were eligible for the parade and the button which marked them as "heralds of health." In 1928–29 the plan carried through on its own momentum without much stimulation and the county winners were admitted free to the state fair in the following September, the Salem children holding their own health pageant in May.

There was no doubt that the campaign aroused enthusiasm and that it resulted in a considerable increase in immunizations. But it was observed that the healthier children qualified year after year while few of the less fortunate changed their rating and that the special examinations at times interfered with the orderly progress of the work of the health unit. Accordingly, in 1929–30 the plan was put entirely in the hands of the teachers, who were to certify to the health standing of their own pupils on the basis of their own physical inspections plus the record of immunizations. It now rests with the teachers to use it as they see fit as a stimulus to their own children.

This change in the mechanics of the "heralds of health" contest was typical of a general change in the perspective of the health education program as a whole. In 1928 the special supervisor of health education retired and the direction of health teaching reverted to the regular school staffs. In Salem the superintendent of schools, the supervisor of elementary education, and a physical education director made special study-trips as guests of the Commonwealth Fund to study methods of health education and its relation to physical education. Similar scholarships were arranged for the county superintendent of schools, her assistant, and three superintendents or principals from smaller cities. In this way fresh interest in health, and fresh technique in teaching it, came into the school administration, while health work took its place as a permanent element in the school

program, neither more nor less important than the rest of the teachers' responsibilities.

The school health work which was going on in Salem at the end of the demonstration gave evidence of the vitality of the new ideas which had been implanted in the minds of teachers and administrators. The public school system of Salem is progressive; though salaries are low, the prestige of the schools and the reputation of the city as a pleasant place to live tend to keep a selected group of teachers at work under the guidance of a strong supervisory staff. Teachers are themselves required to pass a satisfactory personal health examination.[1] Health work, the special responsibility of the elementary supervisor, shows the influence of alert leadership. Several of the grade schools, though they are housed in old and unsatisfactory buildings, are bursting with that feeling of life that comes only when teachers begin to break away from the traditions of formal schooling. Hallways and "activity rooms" are filled with the work that children have done because they wanted to do it—projects that freshen and tie together the subject-matter of half a dozen "courses of study." Here is a series of booths illustrating the history and geographical variations of transportation; there a Viking ship and Viking feast hall reproduced in ingenious models; there an Oregon pioneer's home in miniature, with covered wagon and ox team to keep it company.

Where teaching of this sort is going on, health finds its place naturally and inevitably. The pioneer home, for instance, was only one of the results of an extensive classroom project in the sixth grade which started with the reading of stories of the Oregon trail, involved much making of charts, maps, plays, poems, and booklets, and left the children with a keener sense of Oregon history, geography, and industry

[1] This requirement has also been in force in Silverton for several years.

"HERALDS OF HEALTH" RECEIVING THEIR BADGES: MANY CHILDREN WERE IMMUNIZED, OR HAD TEETH OR TONSILS FIXED, TO WIN THIS AWARD

THIS HEALTH HABIT GAME (DESCRIBED IN THE TEXT, PAGE 89) PLEASES FIRST-GRADE CHILDREN AND KEEPS THE HEALTH DRILL INTERESTING

than they would have been likely to get in any other way. Six charts based on *Milestones of Health Progress in America*, published by the American Public Health Association, traced progress from pioneer days to the present in six different fields. One of these was health: the road began with the colonial birth and death registration law in 1639 and carried the story through to the newest type of smallpox vaccination.

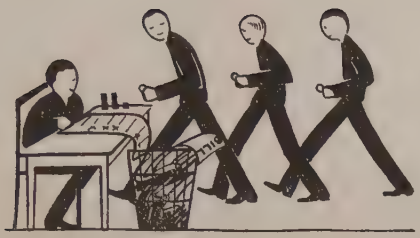
At the beginning of the day, in connection with the morning inspection, the teachers find time for direct drill in health habits. Even here they find a way to make a game of the daily routine. In the best traditions of the story-book West, roulette wheels and all, some teachers use a spinning pointer mounted on a painted circle which carries the names of ten or twenty desirable health practices. Some privileged child spins the pointer: if it comes to rest at "cereal for breakfast," the class is immediately polled to see how many had cereal that morning. The more prosaic daily health records are checked in many rooms, particularly at the beginning of the year, though some classes like to carry them through the whole year's work.

But when this first event of the day is over, there is plenty of health teaching left. In the first and second grades language and reading work naturally deal with the day's experiences and are full of health. In the third grade the child investigates food, clothing, and shelter, thus being painlessly introduced to geography, and all three are loaded with health suggestions. In the fourth grade imaginary journeys in distant lands introduce new variations of health customs. Weighing, which happens once every six weeks, leads naturally into talk of foods and food values. In the fifth and sixth grades old-fashioned hygiene has given place to personal and community health. Thrift forms the subject of special projects each year and health finds its way even here, though it is a fair question whether "saving soap"—

which several children have suggested as a thrifty procedure —is a sound health principle.

In the junior and senior high schools the Salem teachers are just feeling their way to an important extension of health work. In 1929–30 for the first time, physical examinations were given to all the students in these grades. Physical education which used to be indoor gymnastics has become outdoor play whenever the weather permits, and children are carefully sorted out under the doctor's direction into three groups—those who can play freely, those who need corrective drill, and those whose condition makes rest more useful than any form of exertion. Along with the physical education periods each grade from the seventh to the tenth has a period a week for classroom instruction in personal hygiene, public health, mental hygiene, social hygiene, and first aid.

There is real interest among the teachers in the physical condition of the children as revealed by the medical and dental examinations. A group of 45 teachers who voluntarily attended a course in health education taught by the elementary supervisor made graphs of the defects found in all the schools and worked eagerly to reduce them. Teachers call constantly on the nurses, and teacher and nurse together work out the approach to many a parent who has let his child go without the special care that it needed. The superintendent of schools has also taught a class in health, beginning with the fundamental biology and physiology that underly good health teaching, wisely concentrating his attention on sound underpinnings, and leaving detailed methods to the teacher's initiative. Not all the Salem teachers have caught the spirit of such work; some of them never will; but the trend toward an intelligent interest in the individual child—and his health—is unmistakable. This is good education.



CHAPTER VIII

WHAT IT COST

WHAT IT COST

THE public health progress which Marion County has made during the past five years has cost money. "Public health is purchasable," as Dr. Hermann Biggs said when he was health commissioner of New York State. It is not to be had for nothing. The purpose of the Commonwealth Fund in aiding the development of health services in Marion County was to prove that public health was purchasable at a figure well within the means of Marion County and other counties like it.

Whether this proposition was true or not may be judged from the record. In 1924, before the demonstration began, the fragmentary health work of the county cost $.14 per person. Six years later, when the fragments had been gathered together and a sound plan of safeguarding and promoting health was in effect throughout the county, the cost per person had been increased only $.69, to a total of $.83 a year.

In 1924 the Marion County Court devoted eight one-hundredths of one per cent of its total budget to public health. In 1930 it allots almost, but not quite, one cent in each dollar of the budget. In 1924 the city of Salem spent one cent in each budget dollar for health; in 1930 it spends less than two and one-half cents. In 1924 the Salem school board devoted seven mills in each current-expense dollar to health service; now it spends about two and one-half cents in the dollar for this purpose.

In 1924 the total amount spent in Marion County for public health was $6,575—one and one-half hundredths of a mill for each dollar of assessed valuation of property within the county. In 1930 the local health budget, from all sources, is $42,314, which, if it were figured as a direct

EXPENDITURES FOR LOCAL HEALTH SERVICE IN MARION COUNTY, 1924–1930

	1924	1925	1926	1927	1928	1929	1930*
Total	*$6,575*	*$31,289*	*$46,080*	*$47,060*	*$50,167*	*$50,816*	*$42,314*
Local support	6,575	7,739	10,454	13,251	14,828	21,965	33,124
Commonwealth Fund	..	23,550	35,626	33,809	35,339	28,851	9,190
			PER CAPITA				
Total	*$.14*	*$.66*	*$.96*	*$.97*	*$1.02*	*$1.02*	*$.83*
Local support	.14	.16	.22	.27	.30	.44	.65
Commonwealth Fund	..	.50	.74	.70	.72	.58	.18

*Estimated.

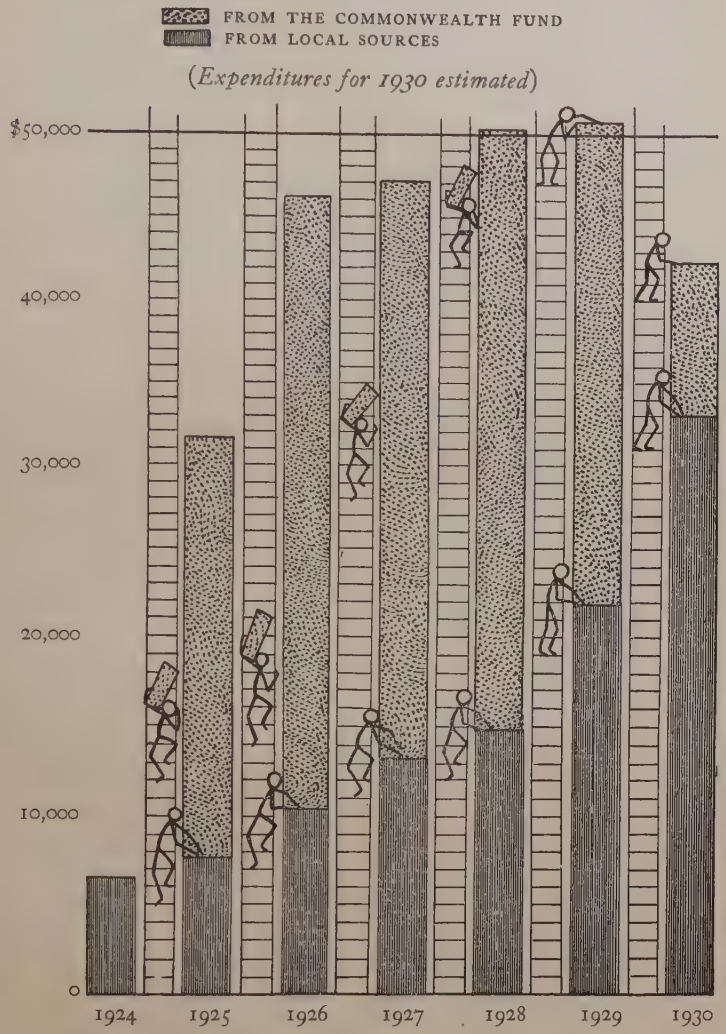
tax, would still be less than one tenth of one mill on each dollar of assessed valuation.

In 1924, the meager health resources of Marion County came separately from the County Court, the Salem City Council, the Salem Board of Education, and the Public Health Association, and there was no machinery for linking any one of the four pieces of work with any other. In 1930, the sources of support are even more numerous than they were six years ago, but the entire public health service of the county is planned as a unit and the pooled resources of public and private agencies are spent under the direction of a single administrative head—the full-time city-county health officer. Into this pool are put the contributions of the county, the city, the school boards of Salem, Silverton, Mill City, and Gates, the Public Health Association, and the Commonwealth Fund, together with nursing fees for special service.[1]

Because the county health unit draws support from so

[1] These fees pay about two-thirds of the salary of one nurse. About 65 per cent of this amount is paid by the Metropolitan Life Insurance Company for services rendered to its policy-holders. The balance comes from individuals who desire limited periods of bedside care which falls outside the routine public health duties of the nurse.

EXPENDITURES FOR LOCAL HEALTH SERVICES IN MARION COUNTY



many different sources, its policies are guided by a special committee in which authority is vested by the agencies which put up the money, each electing one representative. Strictly speaking, this committee has no legal basis for existence, but the arrangement is satisfactory to the community and provides so well for the maintenance of teamwork that steps will be taken to have it recognized by the state legislature as a precedent for other counties. Clearly many counties could find the means to support adequate health work only by a similar process of pooling money from various public and private funds.

The source and growth of local appropriations in Marion County are shown in the following table:

LOCAL FUNDS EXPENDED FOR LOCAL HEALTH SERVICES

	1925	1926	1927	1928	1929	1930*
Local support:						
Total	*$7,739*	*$10,454*	*$13,251*	*$14,828*	*$21,965*	*$33,124*
County Court	630	1,225	1,848	2,047	5,947	8,310
Salem City Council	2,269	2,819	3,381	5,592	7,820	10,500
Boards of Education						
Salem	2,075	2,777	3,231	3,590	4,739	8,000
Silverton	..	..	..	..	275	1,800
Mill City	..	..	..	..	..	800
Gates	..	..	..	..	..	300
State Board of Health†	..	750	900	900	450	..
State Dental Board§	..	1,559	1,814	1,493	1,391	414
Marion County Public Health Association	750	125	300	300	300	1,800
Salem Chamber of Commerce¶	1,731	396	222	..	..	..
Nursing fees	284	803	1,555	906	1,043	1,200

*Estimated.
†Sheppard-Towner funds, not available after 1929.
§Four-year agreement terminating in April, 1930.
¶Special appropriation for headquarters expense of child health demonstration.

Since local authorities, with public approval, have clearly shown their willingness to assume the cost of health work, the Fund is continuing to put a limited sum into the pool. It is expected, however, that the local appropriations will be sufficient to pay the normal public health budget in full by the end of 1931.

In addition to the money which it has spent for strictly local health service, the Commonwealth Fund has carried other expenses which helped to make the experience of Marion County more useful to the Northwest and the nation. During the five demonstration years the money spent in this way amounted to an average of $25,282 a year over and above the Commonwealth Fund subsidy to the continuing local program.

Some of the fruits of the additional investment have been seen in Marion County itself, where the normal process of community education has been speeded up; some have been seen in the contributions which Marion County workers have made to national conferences and periodicals; some have benefited the state of Oregon in general. For instance, members of the Marion County health staff taught courses in public health and nursing for three years in the Extension Division of the University of Oregon; taught health education for four years in the summer school of the Oregon State College of Agriculture; conducted a summer course one year at the Monmouth State Normal School; made a special study of the correlation of physical education and health service at the School of Physical Education at Oregon State College; participated in parental conferences held in four sections of the state under the auspices of the Extension Division of Oregon State College; gave two series of lectures to high-school pupils in Jackson County; gave individual lectures before a number of college, normal school, and high-school classes; and supervised the field

training in Marion County of four groups of student nurses from the Universities of Oregon and Washington. Eight Oregon counties have adopted some form of the honor roll developed in Marion County as a stimulus to health work in the schools.

A special piece of educational work was carried on jointly for four years by the Oregon State Board of Dental Examiners and the Commonwealth Fund.[2] They divided equally the cost of a full-time dentist who not only examined the teeth of all Marion County school children each year and gave dental treatment to children unable to pay for the treatment they needed, but made dental examinations or helped to set up dental health work in Jackson, Klamath, Douglas, and Umatilla Counties. A free dental clinic for indigent children was begun in Jackson County with the help of the staff dentist who also gave more limited assistance in Deschutes, Hood River, and Benton Counties. An advisory committee of dentists from the Tri-county Dental Society, to which Marion County practitioners belong, guided the local dental program.

The physicians of Marion County, too, have brought something more valuable than money to the support of the public health plan. A medical advisory committee representing the medical society, organized at the beginning of the demonstration, has been active ever since, continuing to take counsel with the health unit after the demonstration had run its term. This committee, with the backing of the society as a whole, has considered every step in the development of the health program as it affects the private physician and has maintained without a break an attitude of generous and understanding cooperation. The physicians in general have shown no tendency to take a narrow and competitive

[2] A report of this project may be obtained from the Oregon State Board of Dental Examiners, Portland, Oregon.

view of health services; indeed, a leader of the group has been frank to say that the demand for health supervision has brought them more practice of certain types than they had before. In the last four years of the demonstration, moreover, physicians gave no less than 394 hours of volunteer service at health centers and school examinations.

The public health workers, on their side, have been careful not to interfere with the relations between the doctor and his patients. At the beginning of the demonstration the nursing service adopted the policy of securing the family physician's approval before making a follow-up visit to discuss the findings of the health examination with parents. At the health center the staff physician was careful not to prescribe feedings for the babies brought in unless she was reasonably sure that such a course was agreeable to the doctor usually consulted by the family. When a doctor indicated that he preferred not to have his patients use the health center at all—as happened in one or two cases—the nurse refrained from inviting those mothers to bring their children in for health service. In some cases, on the other hand, a very close relationship grew up between the local physician and the public health staff, the physician referring cases freely to the nurse and health center and the nurse and staff doctor reporting their work informally and frequently to the physician.

Still another resource not measured in money did much to widen the reach of the staff workers and so saved the county money. This was the volunteer service of women throughout the county who gave their time freely in helping at the health centers and the school examinations and sometimes in other ways, such as driving their cars to and from a doctor's office or hospital to make treatment available to children who lacked other means of transportation. In the last four years the number of women helping in these

ways has averaged 354 a year and the average time given has been 3,746 hours. For the four years together this free service has reached the astonishing total of 14,985 hours, or seven and one-half years of ordinary working days. To get the equivalent of this service without such help the health staff would have had to employ almost the full time of two paid workers. The women who have helped so generously, with others of like mind, make up the Marion County Public Health Association which not only pays one nurse out of its own funds, but serves as an important channel through which public opinion can express itself in support of the health program.

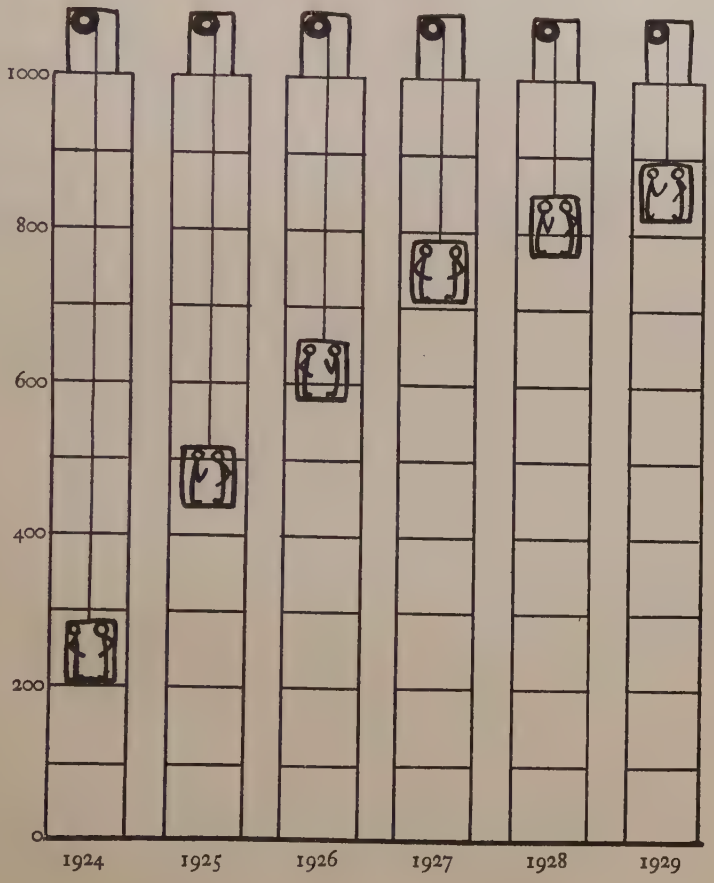
Taken all together, the health services built up by this pooling of resources in Marion County compare favorably with good county health work in any part of the United States. The American Public Health Association has worked out a yardstick for measuring the range and completeness of public health activities in any given county by comparison with standards based on the performance of well-established health departments. This yardstick, called the Appraisal Form for Rural Health Work, has been applied to Marion County by the field director of the American Public Health Association. The public health work done in the county in 1924 scored only 202 points out of a possible 1,000. With the beginning of the new program in 1925 the rating was more than doubled, and it has risen steadily in each succeeding year until the score for 1929 stands at 819.

For measurement in this way, the usual activities of a health department are divided into eleven groups. When the work of the Marion County unit is studied under these classifications, eight of the eleven groups rate better than 85 per cent of the possible maximum scores. Service to preschool children and the handling of vital statistics are

RAISING THE LEVEL OF HEALTH WORK IN MARION COUNTY

AS MEASURED BY THE RURAL APPRAISAL FORM OF THE AMERICAN PUBLIC HEALTH ASSOCIATION

(Possible maximum score 1000 points)



fully up to the standard set; service to infants, laboratory service, and popular health instruction score 95 per cent of the maximum, or better; communicable disease control, prenatal service, and school health service score between 85 and 90 per cent. Of the three remaining fields of work, sanitation and tuberculosis control score 70 per cent of the standard, and only venereal disease control, rated at 12 per cent, is conspicuously low.

As this appraisal shows, health work in Marion County is far from complete. In five years much has been begun, but in public health few tasks are ever finished. The demonstration leaves the health unit plenty of room to grow. The fact of fundamental importance is that the county has committed itself to a broad-gauge plan of health service and is making it work, and that the results are seen in healthier children and fewer deaths. If the experience of Marion County helps to prove that good public health work pays and that it is worth paying for, the purpose of the demonstration has been accomplished.

APPENDIX A

PERSONNEL

PERSONNEL

CHILD HEALTH DEMONSTRATION COMMITTEE

BARRY C. SMITH, *Chairman*

PHILIP VAN INGEN, M.D., *Treasurer*

DONALD B. ARMSTRONG, M.D.
ROBERT E. CHADDOCK, PH.D.
L. D. COFFMAN, PH.D.
W. F. DRAPER, M.D.
LIVINGSTON FARRAND, M.D.
SAMUEL McCLINTOCK HAMILL, M.D.
SALLY LUCAS JEAN
BARBARA S. QUIN
MILDRED C. SCOVILLE

COURTENAY DINWIDDIE, *Director*

EXECUTIVE COMMITTEE
MARION COUNTY HEALTH UNIT, 1926-29

JUDGE J. T. HUNT, 1926–27
JUDGE JOHN C. SEIGMUND, 1927–
Representing Marion County Court

S. ELLIS PURVINE, 1926–
Representing City Council of Salem

FRANK E. NEER, 1926–
Representing Salem School Board

T. M. HICKS, 1926–29
MRS. BRAZIER SMALL, 1929–
Representing Marion County Public Health Association

DIRECTOR OF THE DEMONSTRATION
COUNTY HEALTH OFFICER, *ex officio*

MEDICAL ADVISORY COMMITTEE

W. B. MORSE, M.D., 1925–
H. K. STOCKWELL, M.D., 1925–
H. J. CLEMENTS, M.D., 1925–
E. E. FISHER, M.D.,† 1925
W. W. BAUM, M.D., 1927–
D. R. ROSS, M.D., 1925, 1929
L. O. CLEMENT, M.D., 1926–27
W. W. ALLEN, M.D., 1928
W. H. BARENDRICK, M.D., 1926
W. H. LOTT, M.D.,† 1926

DIRECTOR OF THE DEMONSTRATION, *ex officio*

DENTAL ADVISORY COMMITTEE

FRED ELLIS, D.M.D., 1926–
Representing Marion-Polk-Yamhill Dental Society

CARL E. MILLER, D.M.D., 1926–28
MAX MOON, D.M.D., 1928–29
Representing Oregon State Board of Dental Examiners

DIRECTOR OF THE DEMONSTRATION, *ex officio*
ESTILL L. BRUNK, D.M.D., *Staff Dentist*

MARION COUNTY PUBLIC SCHOOLS

MRS. MARY L. FULKERSON, *Superintendent of Schools, Marion County*
GEORGE HUG, *Superintendent of Schools, Salem*
ROBERT E. GOETZ, *Superintendent of Schools, Silverton*

†Deceased.

STAFF

Director of Demonstration

WALTER H. BROWN, M.D., 1925–27
WILLIAM DEKLEINE, M.D., 1927–28
ESTELLA FORD WARNER, M.D., 1928–29

Health Officer

WALTER H. BROWN, M.D., 1926–27
VERNON A. DOUGLAS, M.D.,* 1927–
(*Deputy Health Officer, 1926–27*)

Director of Medical Service

ESTELLA FORD WARNER, M.D., 1925–28
EDWARD LEE RUSSELL, M.D.,* 1928–29
(*Deputy Health Officer, 1930–*)

Director of Nursing Service

ELNORA E. THOMSON, R.N., 1925–28
FERN A. GOULDING, R.N., 1928–29
AGNES CAMPBELL, R.N.,* 1929–

Assistant Director of Nursing Service

AMELIA FEARY, R.N., 1925–26
FERN A. GOULDING, R.N., 1927–28

Director of Health Education

ANNE SIMPSON, 1925–28

Dentist

ESTILL L. BRUNK, D.M.D.,* 1926–

Dairy and Food Inspector

JOHN EDWARD BLINKHORN,* 1928–

*Member of the Staff of Marion County Health Unit, 1930.

County Sanitary Inspector

CURTIS C. PAYTON, 1928
J. M. REDDY, 1929
HARRY C. SINKS,* 1929–

Statistician

EVELYN C. McKAY, 1925–26
MILDRED M. IHRIG, 1926–29
(*Office Manager, 1928–29*)

Nurses

(*Average staff, eight plus*)

AGNES COVALT
MARTHA HARRISON
LYDA KING
ELLA McNEIL
MILDRED SHACKLETON
BENETA STROUD*
GRACE L. TAYLOR*
IDA E. TWEDTEN
ELIZABETH FREEMAN*
GERTRUDE BREYEN*
MARGARET McALPINE*
IRMA LeRICHE*
RUBY BRAITZKA*
VERNA LANG
ALTHEA STONEMAN

Office Secretary

EDA LEE BESSINETTE, 1925
HELEN PIPPY, 1925–28

Secretarial and Clerical Staff

(*Average staff, six plus*)

MILDRED S. FLAGG
MARLOWE MILLER JONES
ALICE BUTTS
ESTHER DIEFFENBACH
ZELDA HARLAN*
ETHEL MILBURN*
MILDRED JOHNSTON
RUTH RAY
CLARA GASSMAN
HELEN FICKER
HELEN PETTYJOHN
MILDRED GRAYBILL
LOTTIE PETERSON
FLORENCE HUSTON
ANNA ADAMS
BLANCHE SCHWIENING
GRACE LARSON
MERLE BROOKS
HULDA ROTH ELFSTROM
CORA PLANK
VIVIAN OESTREICH
MARY ELLIOTT
DOROTHY ALLEN
CLEMENTINE CHARLES

*Member of the staff of Marion County Health Unit, 1930.

APPENDIX B

STATISTICAL SUMMARIES

STATISTICAL SUMMARIES

Since the complete results of the 1930 census were not available when this report was in preparation, population estimates given below are based on the 1910 and 1920 censuses. The population of Marion County for 1930, estimated on this basis, was 50,757. The actual population, as reported by the Census Bureau, was 55,019. (Both figures exclude the inmates of federal and state institutions.) The tentative birth and death rates which follow are, therefore, slightly higher for the latter part of the decade than the actual rates.

TABLE I

BIRTHS AND DEATHS

	POPULATION	NUMBER	RATE PER 1,000 POPULATION		
	Marion County	*Marion County*	*Marion County*	*Oregon*	*United States Registration Area*
		Live births			
1920 . . .	43,737	817	18.7	18.9	23.7
1921 . . .	44,439	882	19.8	19.3	24.3
1922 . . .	45,141	870	19.3	18.4	22.5
1923 . . .	45,843	863	18.8	18.2	22.4
1924 . . .	46,545	933	20.0	18.8	22.6
1925 . . .	47,247	919	19.5	17.9	21.4
1926 . . .	47,949	883	18.4	16.8	20.6
1927 . . .	48,651	904	18.6	16.4	20.6
1928 . . .	49,353	906	18.4	15.9	19.7
1929 . . .	50,055	781	15.6	..	..
		Deaths, all ages			
1920 . . .	43,737	514	11.8	11.7	13.1
1921 . . .	44,439	484	10.9	10.4	11.6
1922 . . .	45,141	636	14.1	11.5	11.8
1923 . . .	45,843	553	12.1	10.9	12.3
1924 . . .	46,545	546	11.7	11.4	11.8
1925 . . .	47,247	545	11.5	11.2	11.8
1926 . . .	47,949	564	11.8	11.2	12.2
1927 . . .	48,651	595	12.2	11.5	11.4
1928 . . .	49,353	554	11.2	11.6	12.1
1929 . . .	50,055	632	12.6	..	..

NOTE: In tables 1–5 and 7 births and deaths in state and federal institutions within Marion County have been excluded.

TABLE 2

STILLBIRTHS AND MATERNAL DEATHS

	NUMBER	RATE PER 100 LIVE BIRTHS		
	Marion County	*Marion County*	*Oregon*	*United States Registration Area*
Stillbirths				
1920	30	3.7	*	*
1921	30	3.4	*	*
1922	36	4.1	3.1	4.0
1923	25	2.9	3.2	3.9
1924	34	3.6	3.2	3.9
1925	33	3.6	3.0	3.8
1926	36	4.1	3.2	3.8
1927	37	4.1	3.0	3.9
1928	25	2.8	2.9	4.0
1929	26	3.3	..	..
	NUMBER	RATE PER 1,000 LIVE BIRTHS		
	Marion County	*Marion County*	*Oregon*	*United States Registration Area*
Maternal deaths				
1920	5	6.1	9.4	8.0
1921	9	10.2	7.4	6.8
1922	5	5.7	8.3	6.6
1923	8	9.3	6.9	6.7
1924	5	5.4	6.5	6.6
1925	3	3.3	7.2	6.5
1926	1	1.1	5.9	6.6
1927	6	6.6	6.4	6.5
1928	2	2.2	6.1	6.9
1929	4	5.1	..	..

*Figures not available.

TABLE 3

INFANT MORTALITY BY AGE

	NUMBER	RATE PER 1,000 LIVE BIRTHS		
	Marion County	*Marion County*	*Oregon*	*United States Registration Area*
Deaths under one year				
1920	45	55.1	61.8	85.8
1921	40	45.4	50.9	75.6
1922	66	75.9	58.4	76.2
1923	39	45.2	57.3	77.1
1924	52	55.7	53.6	70.8
1925	46	50.1	51.1	71.7
1926	37	41.9	52.5	73.3
1927	42	46.5	47.5	64.6
1928	34	37.5	46.9	68.7
1929	31	39.7	47.8	67.3*
Deaths under one month				
1920	34	41.6	38.6	41.5
1921	26	29.5	32.3	39.7
1922	40	46.0	36.9	39.7
1923	25	29.0	37.4	39.5
1924	36	38.6	35.2	38.6
1925	25	27.2	32.0	37.8
1926	23	26.0	31.9	37.9
1927	30	33.2	30.8	36.1
1928	26	28.7	30.6	37.2
1929	20	25.6	..	..
Deaths one month and under 12 months				
1920	11	13.5	23.2	44.3
1921	14	15.9	18.6	35.9
1922	26	29.9	21.5	36.5
1923	14	16.2	19.9	37.6
1924	16	17.1	18.4	32.2
1925	21	22.9	19.1	33.9
1926	14	15.9	20.6	35.4
1927	12	13.3	16.7	28.4
1928	8	8.8	16.3	31.5
1929	11	14.1	..	..

*Provisional.

TABLE 4

INFANT MORTALITY RATES BY CAUSE AND AGE

	Marion County		*Oregon*		*United States Registration Area*	
	1920–24	1925–29	1920–24	1925–28	1920–24	1925–28
Deaths under 1 year:						
Total	*55.4*	*43.3*	*56.4*	*49.4*	*77.1*	*69.6*
Communicable diseases	2.1	1.6	2.1	1.8	3.5	3.0
Tuberculosis	0.5	0.2	0.4	0.5	0.8	0.6
Respiratory diseases	8.7	6.8	9.0	7.8	13.0	12.3
Diarrhea and enteritis	3.7	4.1	3.9	2.9	12.2	9.1
Congenital causes	34.1	26.6	32.5	29.0	35.5	33.3
Accidents and other external causes	0.5	0.5	1.0	1.0	1.0	1.0
Other causes	6.0	3.4	7.5	6.4	11.1	10.3
Deaths under 1 month:						
Total	*36.9*	*28.2*	*36.1*	*31.3*	*39.8*	*37.3*
Communicable diseases	0.7	0.5	0.2	0.1	0.3	0.2
Tuberculosis	0.0	0.0	0.0	0.0	0.0	0.0
Respiratory diseases	1.8	1.6	2.1	1.5	2.2	1.9
Diarrhea and enteritis	0.7	0.2	0.8	0.4	1.4	1.0
Congenital causes	30.9	24.8	29.6	26.6	31.2	29.6
Accidents and other external causes	0.2	0.0	0.2	0.2	0.3	0.3
Other causes	2.5	1.1	3.2	2.5	4.4	4.3
Deaths 1 month and under 12 months:						
Total	*18.6*	*15.0*	*20.3*	*18.1*	*37.3*	*32.3*
Communicable diseases	1.4	1.1	1.9	1.7	3.2	2.8
Tuberculosis	0.5	0.2	0.4	0.5	0.8	0.6
Respiratory diseases	6.9	5.2	6.9	6.3	10.8	10.4
Diarrhea and enteritis	3.0	3.9	3.1	2.5	10.8	8.1
Congenital causes	3.2	1.8	2.9	2.4	4.3	3.7
Accidents and other external causes	0.2	0.5	0.8	0.8	0.7	0.7
Other causes	3.4	2.3	4.3	3.9	6.7	6.0

TABLE 5

MORTALITY UNDER 15 YEARS OF AGE BY CAUSE

	DEATHS		RATE PER 10,000 POPULATION			
	Marion County		*Marion County*		*Oregon*	
	1920–24	1925–29	1920–24	1925–29	1920–24	1925–28
Total under 15 years of age	*89.2*	*67.8*	*74.1*	*52.4*	*68.1*	*55.1*
Communicable diseases	11.2	5.2	9.3	4.0	6.6	4.6
Tuberculosis	2.2	0.6	1.8	0.5	2.5	1.8
Respiratory diseases	16.8	11.4	13.9	8.8	11.6	8.9
Diarrhea and enteritis	4.4	5.2	3.7	4.0	4.3	3.1
Congenital causes	30.0	23.4	24.9	18.1	22.5	17.8
Accidents and external causes	6.2	7.0	5.1	5.4	6.3	5.3
Other causes	18.4	15.0	15.3	11.6	14.4	13.6

TABLE 6

COMMUNICABLE DISEASE DEATH RATES

	RATE PER 100,000 POPULATION					
	*Marion County**		*Oregon*		*United States Registration Area*	
	1920–24	1925–29	1920–24	1925–28	1920–24	1925–28
Typhoid fever	3.5	2.5	5.1	3.5	7.6	6.2
Smallpox	1.8	0.8	0.6	0.6	0.6	0.3
Measles	5.8	0.8	4.7	1.2	7.4	5.0
Scarlet fever	0.9	1.2	2.0	2.1	4.0	2.4
Whooping cough	3.5	3.3	4.0	4.1	9.0	7.0
Diphtheria	22.2	8.6	10.0	6.6	13.8	7.6
Tuberculosis	74.0	51.4	77.1	60.8	98.9	83.4

*Excludes all deaths in state and federal institutions except those of former residents of Marion County.

TABLE 7

CASES AND DEATHS REPORTED FOR CERTAIN COMMUNICABLE DISEASES

	TYPHOID FEVER		SMALLPOX		MEASLES		SCARLET FEVER	
	Cases	*Deaths*	*Cases*	*Deaths*	*Cases*	*Deaths*	*Cases*	*Deaths*
1920 . . .	9	2	61	0	7	0	14	0
1921 . . .	2	1	64	2	260	5	15	1
1922 . . .	2	1	44	1	5	0	19	0
1923 . . .	8	2	39	0	79	0	33	0
1924 . . .	9	2	32	1	379	8	79	1
1925 . . .	4	1	181	0	11	0	47	2
1926 . . .	17	1	53	2	32	0	71	0
1927 . . .	28	3	39	0	83	0	54	1
1928 . . .	8	0	26	0	902	2	51	0
1929 . . .	4	1	36	0	108	0	56	0

	WHOOPING COUGH		DIPHTHERIA		TUBERCULOSIS		VENEREAL DISEASES	
	Cases	*Deaths*	*Cases*	*Deaths*	*Cases*	*Deaths*	*Cases*	*Deaths*
1920 . . .	15	2	5	2	13	50	12	1
1921 . . .	1	3	28	7	10	28	20	0
1922 . . .	0	0	53	5	31	32	61	1
1923 . . .	4	3	249	19	20	32	42	3
1924 . . .	2	0	265	17	8	25	44	1
1925 . . .	41	3	165	17	78	29	33	2
1926 . . .	87	2	87	2	52	34	30	1
1927 . . .	34	2	41	1	64	21	10	0
1928 . . .	15	1	23	0	48	21	44	0
1929 . . .	39	0	24	1	53	20	19	1

TABLE 8

HEALTH EXAMINATIONS OF INFANTS AND PRESCHOOL CHILDREN

	1925	1926	1927	1928	1929
Number of children examined					
Infant	106	272	311	405	383
Preschool	561	624	596	570	452
Number of examinations					
Infant	127	406	643	989	710
Preschool	695	754	802	834	894
Average number of examinations per child					
Infant	1.2	1.5	2.1	2.4	1.9
Preschool	1.2	1.2	1.3	1.5	2.0
Percentage of population examined					
Infant*	5.9	15.5	17.8	22.9	23.2
Preschool	11.0	12.2	11.6	10.9	8.6

*See note on page 56.

TABLE 9

HEALTH EXAMINATIONS OF CHILDREN IN ELEMENTARY SCHOOLS

	1925–26	1926–27	1927–28	1928–29
Number of examinations	2,565	4,035	3,409	2,131*
Percentage of school enrollment examined	28.3	42.6	34.5	22.4*
Percentage of examinations in presence of parents	54.0	27.3	25.1	44.7

*In this year routine examinations were restricted to the first and fifth grades.

TABLE 10

INCIDENCE OF MODERATE AND SEVERE DEFECTS, 1926–28

	NUMBER OF CHILDREN SHOWING DEFECTS		INCIDENCE PER 100 CHILDREN EXAMINED*	
	Infant and Preschool	*School*	*Infant and Preschool*	*School*
Underweight (10% or more)	290	1,258	9.8	13.3
Unsatisfactory nutrition	30	253	1.0	2.7
Eyes or vision	15	362	0.5	3.7
Ears or hearing	16	104	0.6	0.8
Teeth	**	11,880	**	54.7
Oral hygiene	**	578	**	4.9
Tonsils	266	1,709	9.0	18.1
Nasopharynx	152	731	5.2	7.8
Heart	4	95	0.1	1.0
Lungs	5	32	0.2	0.3
Abdomen	22	**	0.7	**
Genitals	56	**	2.0	**
Skin	42	99	1.4	1.1
Thyroid	9	472	0.3	5.0
Rickets	32	11	1.1	0.1
Orthopedic	23	88	0.8	0.9

*Percentages are based upon approximately 4,200 infant and preschool examinations, 9,445 school medical examinations, and 21,725 school dental examinations. Not all children were rated for all defects.

**Not rated for this age group.

TABLE II

TIME DISTRIBUTION OF NURSING STAFF

(*Annual Average 1926–29*)

	NUMBER	PER CENT
Hours employed: Total	*20,611*	*100.0*
Field service: Total	*8,253*	*40.0*
Health center	1,473	7.1
School service	2,847	13.8
Nursing visits	3,933	19.1
Related service: Total	*12,358*	*60.0*
Educational and organization activities	2,628	12.8
Office work	3,700	18.0
Travel	3,598	17.4
Vacation and sick leave	2,432	11.8

TABLE I2

TIME DISTRIBUTION OF NURSING VISITS

(*Annual Average 1926–29*)

	NUMBER OF HOURS	PER CENT	MINUTES PER VISIT
Nursing visits: Total	*3,933*	*100.0*	*22.7*
Maternity service: Total	*954*	*24.2*	*42.0*
Prenatal	214	5.4	24.9
Delivery	201	5.1	139.5
Postnatal	539	13.7	42.6
Child health service: Total	*1,517*	*38.6*	*18.8*
Infant	682	17.4	27.2
Preschool	209	5.3	15.3
School	626	15.9	15.0
Mortality service: Total	*1,462*	*37.2*	*21.0*
Tuberculosis	235	6.0	20.0
Other communicable diseases	394	10.0	14.4
Non-communicable diseases	833	21.2	27.5

TABLE 13

NURSING VISITS

	1925	1926	1927	1928	1929
By age group: Total	*4,426*	*10,778*	*10,604*	*10,792*	*9,402*
Infant	425	1,276	1,274	1,814	1,980
Preschool	532	1,082	1,156	1,328	1,684
School	2,655	5,380	4,893	4,656	3,260
Adult	814	3,040	3,281	2,994	2,478
By type of service: Total	*4,426*	*10,778*	*10,604*	*10,792*	*9,402*
Maternity service: Total	272	*1,223*	*1,535*	*1,532*	*1,182*
Prenatal	96	471	601	421	592
Delivery	7	101	136	96	13
Postnatal	169	651	798	1,015	577
Health supervision: Total	*3,056*	*4,903*	*4,572*	*5,167*	*5,401*
Infant: Total	*418*	*1,221*	*1,183*	*1,737*	*1,941*
Under one month	144	611	740	1,024	704
One month and over	274	610	443	713	1,237
Preschool	442	643	669	732	1,274
School	2,196	3,039	2,720	2,698	2,186
Tuberculosis: Total	*363*	*804*	*650*	*709*	*601*
Infant	1	..	..	2	1
Preschool	3	79	24	97	34
School	87	286	186	130	133
Adult	272	439	440	480	433
Other communicable: Total	*329*	*1,723*	*1,701*	*1,877*	*1,232*
Infant	2	16	33	11	20
Preschool	32	183	259	338	238
School	247	1,157	1,163	1,228	741
Adult	48	367	246	300	233
Care of sick (non-communicable): Total	*406*	*2,125*	*2,146*	*1,507*	*986*
Infant	4	39	58	64	18
Preschool	55	177	204	161	138
School	125	898	824	600	200
Adult	222	1,011	1,060	682	630

TABLE 14

AVERAGE NUMBER OF NURSING VISITS PER INDIVIDUAL

	1925	1926	1927	1928	1929
By age group					
Infant	3.4	5.1	4.3	5.0	3.5
Preschool	1.6	2.2	2.8	2.3	2.5
School	1.8	2.4	2.6	2.4	2.1
Adult	3.6	3.6	4.6	4.3	4.7
By type of service					
Maternity service: Total	*5.1*	*7.2*	*7.5*	*7.0*	*5.3*
Prenatal	2.6	4.0	4.1	2.7	3.1
Delivery	1.0	2.3	1.7	1.4	1.3
Postnatal	5.5	6.1	5.9	6.3	4.3
Infant health supervision: Total	*3.3*	*5.5*	*4.3*	*5.4*	*3.9*
Under one month	5.0	6.1	5.2	6.4	2.9
One month and over	2.5	3.4	2.5	2.8	3.3
Preschool health supervision	1.4	1.9	1.7	1.7	2.6
School health supervision	1.8	2.5	1.9	1.8	1.8
Tuberculosis control	6.0	5.8	4.3	3.6	2.5
Communicable disease control	2.1	2.3	2.2	1.7	1.6
Care of sick (non-communicable)	2.4	2.8	2.9	3.2	3.3

TABLE 15

EXPENDITURES FOR LOCAL HEALTH SERVICES CLASSIFIED BY PURPOSE

	1925	1926	1927	1928	1929	1930*
Total expenditures	*$31,289*	*$46,080*	*$47,060*	*$50,167*	*$50,816*	*$42,314*
Salaries of technical staff	*17,707*	*29,470*	*30,849*	*32,644*	*32,001*	*28,889*
Health officer	3,133	4,000	4,000	4,000	4,000	4,000
Pediatrician	2,000	3,000	3,000	3,000	3,000	3,000
Dentist	..	2,250	2,500	2,438	2,500	1,789
Nurses	10,474	16,920	18,049	18,006	17,703	14,700
Inspectors	1,200	1,500	1,500	4,120	4,798	5,400
Health educator	900	1,800	1,800	1,080	..	..
Operating costs	*13,582*	*16,610*	*16,211*	*17,523*	*18,815*	*13,425*
Clerical salaries	1,600	2,400	2,400	2,400	2,400	2,400
Transportation	6,076	7,865	7,940	8,656	9,232	5,487
Laboratory	..	..	..	..	1,000	1,200
Other	5,906	6,345	5,871	6,467	6,183	4,338

*Estimated.

TABLE 16

ANNUAL SCORES FOR PUBLIC HEALTH PERFORMANCE BASED ON APPRAISAL BY THE AMERICAN PUBLIC HEALTH ASSOCIATION

	MAXIMUM SCORE	MARION COUNTY SCORE				
		1924	1925	1926	1927	1928	1929
Total score	*1,000*	*202*	*431*	*580*	*705*	*768*	*819*
Vital statistics: Total	*60*	*12*	*34*	*45*	*58*	*60*	*60*
Registration	8	..	8	8	8	8	8
Checking and verification	12	..	3	8	11	12	12
Reporting efficiency	8	..	4	4	8	8	8
Classification and compilation	24	..	18	24	24	24	24
Interpretation and application	8	..	1	1	7	8	8
Communicable disease control: Total	*175*	*26*	*42*	*78*	*132*	*142*	*151*
Reporting	18	..	13	18	17	18	18
Record keeping	22	..	4	11	22	22	22
Methods of control	36	..	6	15	27	28	36
Visits to cases	22	..	7	21	22	22	22
Diagnostic service	5	..	0	5	5	5	5
Hospitalization	16	..	2	6	7	4	4
Immunization	56	..	10	2	32	43	44
Venereal disease control: Total	*50*	*0*	*8*	*15*	*6*	*7*	*6*
Reporting	12	..	1	2	1	2	1
Treatment of cases	30	..	3	5	5	5	5
Discontinued cases returned	8	..	4	8	0	0	0
Tuberculosis control: Total	*100*	*31*	*39*	*50*	*57*	*58*	*71*
Reporting	10	..	6	7	5	5	10
Field nursing service	25	..	11	20	25	24	24
Clinical service	25	..	2	3	12	5	15
Hospitalization	25	..	20	20	15	24	22
Open-air classrooms, preventoria, or day camps	15	..	0	0	0	0	0
Prenatal health service: Total	*75*	*19*	*30*	*58*	*60*	*63*	*67*
Field nursing service	30	..	7	23	25	25	25
Medical conferences	25	..	3	15	15	18	22
Obstetrical service	20	..	20	20	20	20	20
Infant health service: Total	*75*	*1*	*19*	*50*	*62*	*67*	*72*
Field nursing	35	..	10	35	35	35	35
Medical conferences	25	..	9	15	25	25	25
Nurses conferences	15	..	0	0	2	7	12

	MAXIMUM SCORE	1924	1925	1926	1927	1928	1929
Preschool health service: Total	*50*	*0*	*35*	*35*	*50*	*50*	*50*
Field nursing service	10	..	10	10	10	10	10
Preschool conferences	40	..	25	25	40	40	40
School health service: Total	*150*	*25*	*89*	*96*	*119*	*125*	*132*
Weighing	10	..	2	10	9	8	8
Physical examination	45	..	42	39	39	40	44
Correction of defects	30	..	0	2	18	22	21
Nurses' visits	5	..	5	5	5	5	5
Nurses' conferences	5	..	0	0	3	4	3
Sanitation of school buildings	15	..	4	4	9	6	11
Health instruction	25	..	25	25	25	25	25
Recreation and physical education	15	..	11	11	11	15	15
Sanitation: Total	*175*	*58*	*73*	*77*	*85*	*113*	*123*
Sanitary inspection service	30	..	25	23	30	30	30
Food handlers examinations	5	..	0	0	0	0	3
Milk supply control	60	..	11	17	18	42	45
Water	40	..	22	22	22	26	30
Sewerage	40	..	15	15	15	15	15
Laboratory: Total	*70*	*29*	*50*	*58*	*57*	*64*	*68*
Examinations in diagnostic service	40	..	29	35	35	34	38
Examinations in sanitary service	30	..	21	23	22	30	30
Popular health instruction: Total	*20*	*1*	*12*	*18*	*19*	*19*	*19*

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